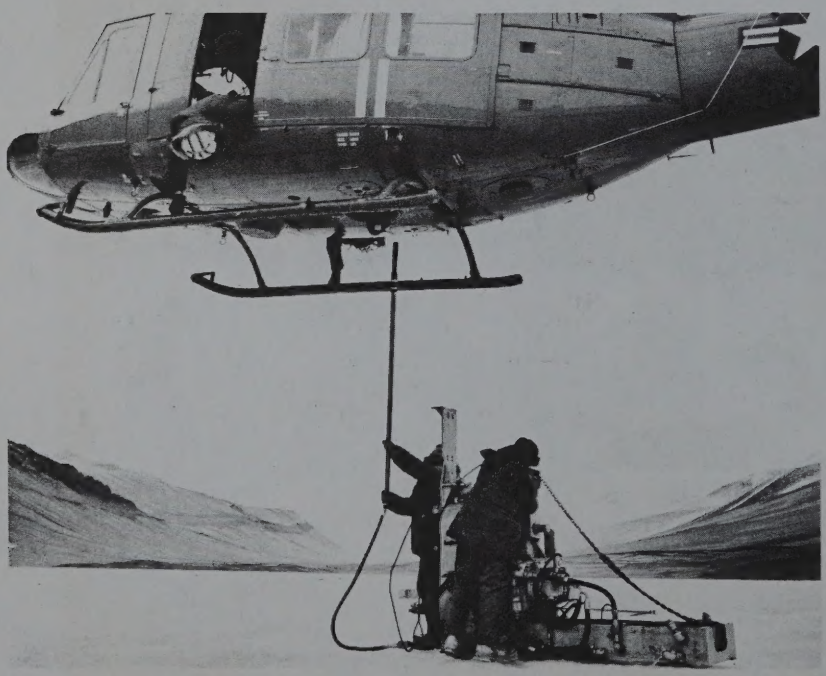
THE POLAR TIMES

The New York Times/Malcolm W. Browne

IN ANTARCTICA: Scientists study the habits of Weddell seals living on the ice of McMurdo Sound, in the polar region. Earlier this month, a new group of technicians and scientists replaced the men already there.

The New York Times/Malcolm W. Browne

CLOSE CALL: Two Americans back away in a hurry when part of the ice wall of Commonwealth Glacier collapses nearby. The glacier flows through the Transantarctic Mountains, an area believed rich in natural gas, oil and minerals. The exploitation of these natural resources is a source of concern to many.



U.S. Navy

UH-1N helicopter hovers while U.S. Navy Antarctic Development Squadron Six (VXE-6) and Dry Valley Drilling Project (DVDP) personnel ready the drill engine for airlifting from Lake Vanda (site 4) to Don Juan Pond (site 5).

Antarctic tern.

Study of the little-known antarctic tern (figure) went well and we were able to gather much data on the species breeding behavior. Preliminary findings indicate that although its breeding biology (clutch size, egg laying and incubation periods, role of the sexes in care of eggs and chicks, etc.) is generally similar to that of the arctic tern

The Polar Times

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No. 79 *DECEMBER 1974*

Midsummer Sun Brings Bustle to Polar Life

Young Scientists Put Aside Thoughts of Work and Survival After 10 Months of Isolation in a Frozen Land

By MALCOLM W. BROWNE

The New York Times Dec. 29

Adm. Richard E. Byrd, broadcasting from Antarctica in the nineteen-thirties, conveyed through the static a vivid sense of the breathtaking excitement of an enchanted place—deadly, indeed, but also indescribably interesting and beautiful.

Now, despite some flaws, Antarctica and the men who work there still closely match the American explorer's depiction. In an eight-day tour, one visitor found the grandeur of a vast mountain range, the endless sweep of the polar plateau and the luminous, blue menace of 1,000-foot crevasses in a monstrous glacier as exciting as they must have been in the old days.

Though there is almost regular air service, relatively few people set foot on Antarctica, and far fewer see the interior and the South Pole. To reach such places these days without the help and support of the National Science Foundation, which coordinates all United States research on the continent, would almost be comparable to trying to go to the moon without the help of the National Aeronautics and Space Administration.

Of 100 newsmen who asked to visit Antarctica this year, seven were chosen and six, including this reporter, went. The criteria for selection were never specified; the National Science Foundation obviously hoped to make its Antarctic program known as widely as possible. Having entered the inner circle and passed a battery of physical tests, I was pronounced fit to fly to the staging base at Christchurch, New Zealand and, thence, to Antarctica, with trips to McMurdo Station, Scott Base and the South Pole.

There is a cheerful bustle of coming and going in Antarctica these days, suggestive both of the beginning of a new college year and of a destroyer's arrival in port after a long, hard cruise.

It is the time of midsummer change, when bearded men in filthy red or green parkas leave their winter warrens for the outer world, to be replaced by a startlingly young-looking batch of scientists, technicians, contractors, pilots and administrators. Even some senior administrators and researchers are still in their twenties.

As cracks widen in the Ross Sea ice and snow turns to slush under 24-hour-a-day sunlight, penguins, skuas, seals, husky dogs and people grow frisky. Such serious matters as survival and research are momentarily put aside.

A few older hands continue to raise eyebrows at the presence of women in Antarctica again. This year the American community will include 12 women—scientists, cooks, nurses and a secretary—among the several thousand men staying for varying periods.

The people leaving after 10 months' isolation, darkness and temperatures ranging to more than 100 degrees below zero, seem eager to rejoin families and friends in the "real world." The new arrivals at the inaccessible place seem equally happy to have joined an exclusive community.

Dr. Marc Bekoff and his wife, Anne, a zoologist, skipped hand in hand past a stark row of military-style quonset huts at McMurdo Station, where they were waiting for transportation to Cape Crozier to study an Emperor penguin rookery.

"This is the greatest place in the world," Dr. Bekoff said, "and getting here is the realization of a dream, although maybe we'll be so sick of penguins we'll be ready to shoot them in the zoo by the time we leave."

A more experienced couple are Dr. Arthur De Vries and his wife Dr. Yuan De Vries, a biochemist. They discovered several years ago that glycoproteins in the blood of certain Antarctic fish act as antifreezes, enabling the fish to survive at very low temperatures. The finding is important to a number of projects, including work on an artificial lung for human beings.

They also discovered that one of the fish, Dissostichus mawsoni, is delicious when marinated in Chinese condiment—Yuan De Vries is a native of China—and barbecued over charcoal along the ice-bound shores of the Ross Sea.

Dissostichus mawsoni, brought up by winches through ice holes, weighs about 90 pounds and produces large quantities of meat after the experiments are completed. It is in great

The New York Times/Dec. 29, 1974

Map to right denotes some bases in Antarctic. Map above indicates some of sites where American scientists are working.

demand at the seemingly endless parties at McMurdo Station.

Despite the summer sun the temperature at McMurdo rarely rises above 40 degrees. The summer temperatures at the South Pole are brisker still, hovering around 10 below zero. (The lowest temperature recorded on earth, 126.9 degrees below zero Fahrenheit, was experienced on Aug. 24, 1960, at the Soviet Union's Vostok Station, in eastern Antarctica.)

It is too chilly to stand around for long barbecuing fish but the weather is ideal for exploring ice caves, climbing the slopes of Mount Erebus and bagging seal.

Scientists studying the 5,000 Weddell seals living on and under the ice of McMurdo Sound are assisted by such gadgets as underwater television and by radio transmitters attached to the animals' flippers that emit signals during mating.

The seals must frequently be handled — they are all counted once a week—and to pacify them while blood samples are taken or tags are attached, bags are thrown over their heads. Attaching the bags usually involves a brief struggle, although the seals seem to like human beings, and there are always volunteer office workers, cooks and others to do the work. They say it is like roping calves at a rodeo.

Despite the fascination of Antarctica, some of its residents—military in particular —prefer the overheated, windowless life of the buildings, which house fairly elaborate bars and lounges. The local liquor store has found it necessary to ration supplies.

A closed-circuit television station broadcasts films like "Deep Throat" to any who are interested.

"Tunnel life," a permanent aspect of Antarctica, is scheduled to change for the better at the South Pole, where a new station will be inaugurated Jan. 9. Its heart is a huge aluminum dome designed to keep the ever-drifting snow from engulfing the three large buildings inside.

Old South Pole Station, built in 1957, is being crushed under the weight of accumulated snow, and its deformed rooms and tunnels, shored up with creaking posts, will be abandoned.

The dome, built geodesically, consists of five-inch aluminum I-beams and aluminum plates, all carried in hundreds of trips by C-130 turboprop transport planes on skis. One hundred sixty-four feet in diameter and 52 feet high, it was completed three weeks ago and is designed to last 15 to 20 years —a long life by polar standards.

Enough snow has accumulated on one side of it so that hardier South Pole Station residents, for want of other outdoor activity, sled down its sides, usually tumbling hard at the bottom.

Younger station residents, who enjoy clowning, have formed a marching band that greets visitors. Dressed only in light work clothes or underwear, they parade with a banner reading "Stop Antarctic Whaling" until the laughter freezes.

The novelty of standing on or running around the South Pole wears off quickly, especially since the flag marking the pole moves with the ice in which it is stuck at the rate of about a foot a month. (Physicists always know where the real pole is, but the layman has only the fairly inaccurate flag.)

A new indoor movie theater, library, sauna, bar, gymnasium and game rooms are especially welcome to teams accustomed to quarters resembling those of a submarine.

The new station cost the National Science Foundation, which pays for all United States Antarctic programs, $6-million for material alone. This is a substantial sum when compared with the annual Antarctic budget of $25-million, which pays not only for research and building but for Navy support from icebreakers, planes and helicopters and for other necessities.

The relative luxury of new American buildings is a result of a gradual shift in operating responsibility from the Navy to a civilian contractor, Holmes & Narver, Inc., of Anaheim, Calif.

"The Navy made us all live like tunnel rats," a scientist said. "You may think this new station is too much of a palace to squander on 15 years of research at a God-forsaken hole like the South Pole. But if you'd ever wintered over in Antarctica, you'd know it's worth every penny."

People who stay long in Antarctica become so healthy that when outsiders such as reporters arrive with "foreign" germs, the residents become ill.

One of the party of six newsmen, an Ohio television man named Bill Baker, introduced a strain this year that came to be called the Cleveland Plague. The flu-like ailment infected many scores of Antarcticans before running its course. I was lucky enough to escape the sickness, but found myself sniffling constantly.

Despite the relative warmth of the summer weather, temperatures around 20 below zero quickly chill fingers operating cameras or taking notes at the South Pole, lenses fog up and deep frost covers the fur trim on parkas. To say the least, normal work becomes inconvenient.

A more difficult problem proved to be getting comfortable in the suffocating heat of quonset and other huts, especially while wearing the many layers of protective clothing and thermal boots provided by the National Science Foundation.

There have been reports of streaking and other unclothed clowning at the South Pole, and some old hands delight in walking around in light shirts and trousers at low temperatures. However, the visitor unused to polar conditions is permitted no relaxation of the rules, and frostbite has not occurred in years. To study frostbite, doctors said, it is best to work in a hospital in Chicago that receives drunks who have gone to sleep in the freezing streets.

In the constant darkness and isolation of winter at the South Pole, where temperatures fall to 100 degrees below zero and lower and 200-mile-an-hour winds blast obstacles to powder, the common cold is virtually unknown.

The remote outposts of human life strewn across the vast continent may prove to be the healthiest places on earth—at least during the long winter, when they are completely out of physical contact with the rest of the world.

The main clinical drawback is that when the inhabitants return to more hospitable parts they become ill much more readily than other people, their immunity systems apparently having temporarily atrophied.

The physiological changes, which presumably would be similar to those of long space flights, are the subject of a study beginning here.

The program, under the overall direction of Dr. Harold G. Muchmore of the Oklahoma Medical Research Foundation, will be conducted locally by an assistant, Dr. Michael Hummer.

Dr. Hummer, who is 27 and single, is one of 18 men selected to remain at South Pole Station for about 10 months this year and next, during the Antarctic winter, which is at its worst in July.

"We have found," he said, "that people isolated here quickly lose white blood corpuscles because of the lack of challenge from outside organisms. A normal person in the outer world may have a white-blood-cell count of from 5,000 to 10,000 per cubic millimeter. After six weeks here the count falls to about 3,500."

White corpuscles contain the substances that combat foreign microorganisms.

Although scientists, tech-

The Polar Times

Published June and December by the
AMERICAN POLAR SOCIETY,
August Howard, Secretary,
98-20 62nd Drive (Apt. 7H),
Rego Park, New York 11374

AUGUST HOWARD, Editor

THE POLAR TIMES highly recommends "The Polar Record," published by the Scott Polar Research Institute, Cambridge, England.

The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are $2.00 a year or $5.00 for 3 years, which entitles members to receive THE POLAR TIMES twice a year.

Back issues, No. 1 through No. 77, if available are 50 cents each. Issue 78 and onward are $1.00.

The American Polar Society is classified as a tax exempt organization under Code Section 509 (a) (2).

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nicians and craftsmen sometimes arrive with colds, the base becomes extremely healthy after six weeks of isolation.

At another remote American-operated research base, Siple Station, which is at the base of the Antarctic Peninsula near the Ronne Ice Shelf, four men have just completed a stay of nearly 10 months without having had a cold or other respiratory difficulty.

"The problems begin when winter ends," Dr. Hummer said.

The first plane or ship arriving at the end of winter also carries in a load of bacteria and viruses, which invariably make most people ill.

Currently, with the summer sun shining constantly, airplanes shuttle between stations several times a day. When Antarctica closes again after the last plane leaves in February, Dr. Hummer will take regular blood and saliva samples from his station teammates, collecting lymphocytes, gamma globulin and other substances that produce immunity to test later for the ability to fight staphylococcus bacteria.

While freezing and frostbite are rare—the danger is so obvious that everyone takes the necessary precautions—the healing of such things as cuts, broken bones and sores caused by exposure to wind-blown ice crystals is slow, for reasons not yet understood but possibly related to the atrophy of the immunity system.

Blasts Block Descent Into Antarctic Volcano

SCOTT BASE, Antarctica, Dec. 24 (Reuters)—Scientists hoping to make a descent into the crater of Mount Erebus, an active volcano, have abandoned the attempt because of violent explosions.

During three explosions last night a lava bomb weighing more than a ton was hurled out.

Dr. Shaun Norman, New Zealand leader of the 14-man joint New Zealand-French expedition, said today:

"It is a common sense decision. It is not fair to expect men to go down into the inner crater during the present rate of volcanic activity."

He said the party, which has been on Mount Erebus for more than two weeks, would probably leave on Sunday or Monday.

All the Polar World Is Their Laboratory

By MALCOLM W. BROWNE

The New York Times Dec. 30

The handful of reporters and visiting scientists permitted to go to Antarctica each year travel and see more than almost anyone stationed there. After long periods of isolation the scientists and technicians living at remote posts all seem happy to talk with outsiders, including this reporter and five others who visited Antarctica for eight days in December under the auspices of the National Science Foundation.

There is among nearly all the inhabitants a community of interest and devotion to Antarctica that leads to endless talk over long meals and a tendency to overeating.

All the Americans in Antarctica eat well—especially those at McMurdo Station, where a mess-hall meal includes many kinds of juice, delicacies like fresh shrimp and game hens, and even fresh fruit and salad greens flown from New Zealand.

Soviet exchange scientists living and working with the Americans this year were joking that the heavy diet would "permanently wreck our will to work."

Antarctica, still romantically described as the last frontier, has become a permanent continentwide laboratory offering some of the unique qualities of an orbiting space station.

The days are past when explorers like the Briton Capt. Robert F. Scott literally gave their lives dragging geological specimens from the frozen wastes.

Nor are there spectacular discoveries every year, like the finding four years ago of Triassic reptile fossils in the Transantarctic Mountains. The discovery provided final proof that Antarctica was once joined to Africa.

Even during the relatively quiet summer season, scientists sponsored by the National Science Foundation, a United States Government agency, are conducting about 70 research programs.

Some programs, such as one that makes penguins shiver by direct stimulation of their central nervous systems, seem esoteric, at least superficially. Others, such as a study to determine whether the Antarctic ice cap is deteriorating, are of much more obvious general interest. If it is deteriorating, as some glaciologists believe, much of the world's coastal land will eventually be flooded.

To deal with such problems the scientists operate on lean budgets, often relying on ingenuity in improvising complicated electronic research tools from bits and pieces acquired in unorthodox ways. A handful are working mainly for the money and have little interest in Antarctica.

"Frankly, research grants are terribly hard to come by these days," a scientist said. "I had never particularly thought of Antarctica in the past, but when the possibility of a grant presents itself, you can think up a problem and a research program in a hurry, as much to get at that grant as anything else."

With the few such exceptions, the mystery, challenge and harsh, sterile beauty of Antarctica tend to draw scientists back year after year, and there are far more applicants than positions.

The New York Times

Dr. H. T. Hammel conducts studies on the central nervous system of penguins.

The few forms of animal and plant life that inhabit the coasts of Antarctica and its waters continue to interest researchers.

One of the most important biological programs is continuing under the direction of Dr. Arthur DeVries and his wife, Dr. Yuan DeVries. They have discovered glycoproteins that prevent the blood of Antarctic fishes from freezing even at low temperatures. A broader understanding of these substances is expected to have an important outcome for human patients suffering from acute respiratory collapse and in the development of artificial lungs.

Other scientists are studying the surprising ability of Adelie penguins to walk enormous distances inland to breed, surviving with no food other than the body fat they metabolize.

Inanimate qualities of a continent the size of the United States and Mexico combined also remain of cardinal importance.

As the southernmost place in the world, Antarctica provides an unmatched view of the southern skies, including the brilliant auroral displays of the six-month Antarctic night, cosmic rays and other astronomic phenomena.

The drift of the continent and the ice covering it are under study with thousands of instruments, including a gravity meter so sensitive it can detect a difference of only a few feet in its distance from the center of the earth.

Geologists are drilling ever deeper holes—one is more than 1,000 feet deep—to study the origin and history of the continent, not to mention its potential energy and mineral resources.

A few men have made a hazardous camp this year at the rim of the crater of an active volcano, Mount Erebus, to draw gas and lava samples.

Weather in Antarctica, which has a profound effect on weather throughout the world, is under continuous scrutiny, and results are reported widely.

The fact that Antarctica is the windiest, coldest, driest place in the world is useful for many experiments and studies, and its total isolation in winter has made it ideal for investigating man's immune responses in a perfectly healthy environment.

"The thrill of research is heightened for everyone by

the fact that Antarctica is still largely unexplored," a scientist said. "Even working every day, the radar-equipped explorer plane charting the terrain under all that ice still has a very long way to go. How many other places in the world are there where you still have a chance of having a newly discovered mountain or microorganism named after yourself?"

We stopped in a wind-blasted "dry valley" for a while, just to collect some of the unique basaltic rocks pitted, warped and polished by 200-mile winds. The kind of extraterrestrial aspect of the lifeless valleys and mountain passes piqued a Navy helicopter pilot to plant a plastic Christmas tree not far from the site of an old helicopter crash.

Sometimes such tourist stops prove risky.

Our party landed under the snout of the Commonwealth Glacier one day—a cliff of ice 100 or so feet high protruding into a shallow, rocky valley. As we walked toward the glacier face from our two parked helicopters, the ice towering above us began to rumble, perhaps disturbed by the vibration of the rotor blades.

As we ran out of the way a huge section of the wall collapsed and a deluge of ice narrowly missed two of our pilots.

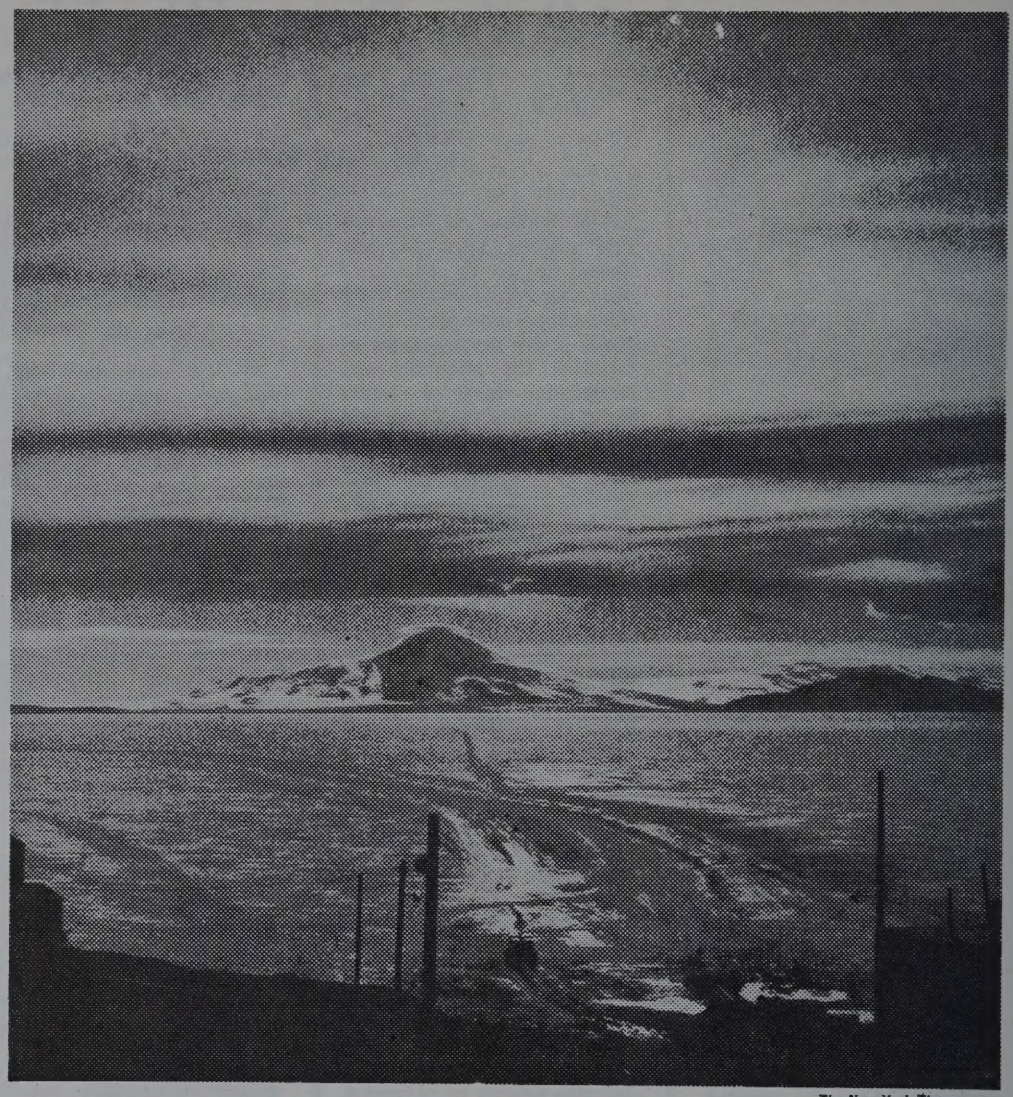
Little doubt remains that enormous resources in fuel, minerals and food lie under the ice and rock of Antarctica and the waters surrounding it. But the men working there dread the day when such resources are actually found and exploitation begins.

In the minds of many Antarctica is the last pure place on earth—a land more valuable as an ideal and a symbol than as a source of wealth.

"Antarctic coal fields have long been known," an American geologist said. "The research drilling ship Glomar Challenger has found enough natural gas and oil traces in Antarctic waters to indicate the probability of enormous petroleum resources. But the day we start pumping it out is the day one of the last refuges of man's soul will die."

Throughout the continent huts belonging to Americans, Britons, New Zealanders, Japanese and others display posters calling for a ban on Antarctic whaling, for almost all Antarctic hands are passionate conservationists.

"There is real danger that someone will unilaterally begin exploiting Antarctica commercially when the temptation grows too great," a Japanese seismologist said. "It is important that the Japanese Government, among others, commit itself soon to a conservation policy here."



The New York Times

The summer sun glows over the vast ice expanses that surround McMurdo Station. Studies are in progress to determine whether the Antarctic ice cap is deteriorating.

Actually, prospecting is going on despite the fact that the continent is covered with ice up to three miles thick. There are rumors of important American finds in the Pensacola Mountain range.

Soviet scientists say there is increasing evidence of resources not only offshore but concentrated along the boundaries of former glaciation.

"The trouble is," a New Zealand scientist said, "work in Antarctica is very expensive, and many people in the world are not satisfied to see money spent on pure research. They want tangible results, and nothing would satisfy them more than seeing us strike oil or a gold mine or something. So, despite ourselves, we find ourselves thinking of these things."

For the moment quarrels over territorial claims in Antartica are in abeyance as a result of a 1959 treaty. Eleven nations, including the United States and the Soviet Union, signed that treaty, and six others, the latest East Germany, have acceded to it. The treaty could lapse in 1993, and enforcement powers are provided.

Argentina, Chile, Britain and New Zealand are among the nations claiming land, some of the claims in conflict with each other. The United States, while recognizing none of them, has not yet claimed any land itself, although it reserves the right to do so.

Actually, the western and mountainous part of the continent is already dominated by the Americans, who maintain three or four permanent bases and many summer stations and a summer force of well over 2,000. The Russians operate in large numbers in the east, on the vast ice plateau and along the coasts.

Old hands even fear the effects of tourism if it should ever become popular. At present commercial tourism is limited to the occasional—and expensive—visit by a tour agency ship or an Argentine vessel. There are no hotels or commercial accommodations.

"Sooner or later I'm expecting the worst," an engineer said. "There's no place on earth like this, and for the wealthy it's the experience of a lifetime just to see the smoke plume above Mount Erebus across the snowfields."

"But you know what will happen?" he continued. "A while ago a tour ship put in, and an American woman visiting Scott's hut here actually had the gall to take a 60-year-old can of cookies off a shelf, taste them and pronounce them delicious.

To Share the Polar Wonders Just Answer the Classified Ads

By MALCOLM W. BROWNE

The New York Times

Dec. 31

Anyone going to Antarctica, for however short a visit, must pass a rigorous physical examination. The traveler is supposed to be able to carry a 30-pound load at altitudes above 10,000 feet and in temperatures in excess of 50 degrees below zero and keep it up, if necessary, for several days with neither food nor sleep.

Actually no one in our party, which included six reporters, who visited Antarctica for eight days in December under the auspices of the National Science Foundation, had to work so hard. However, one of the visiting scientists, Dr. Andreas B. Rechnitzer, made a fairly good effort. In the 1959-60 season he had piloted the submersible Trieste to the bottom of the Marianas Trench in the Pacific Ocean—35,800 feet—establishing a depth record. In Antarctica this time he amazed younger colleagues by spending much of his time in a wet suit, scuba-diving under the ice of the Ross Sea.

Despite the preparations the reporters found Antarctica exhilarating but exhausting, particularly trudging along in heavy clothing near the South Pole at a pressure equivalent to an 11,000-foot altitude.

A few years ago hardy men could reach the frozen fastness of Antarctica only as whalers and sealers, professional sailors or hand-picked members of exploratory expeditions. Today they are doing it by answering classified advertisements.

The change has been wrought largely by the National Science Foundation, which has shifted most of the new construction and development work in Antarctica from the United States Navy to a civilian contractor, Holmes & Narver, Inc., of Anaheim, Calif.

When Holmes & Narver needs surveyors, cooks, bulldozer operators, engineers or common laborers it advertises. That was how the grandson of the late polar explorer Adm. Richard E. Byrd came to be at the South Pole this year.

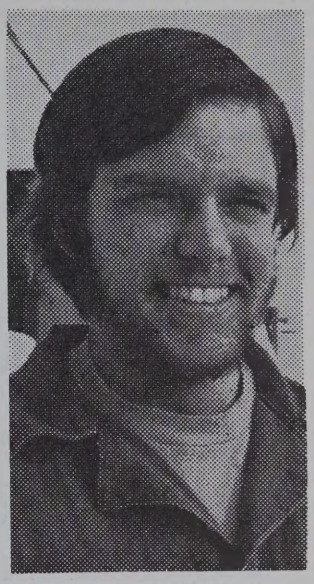
"I arrived in Antarctica in October, 1973, not as an explorer like my grandfather but as a common laborer," said Robert Byrd Breyer. "I had a degree in business administration, but that didn't qualify me for any of the specialized jobs. I just answered an ad by H&N in The Los Angeles Times, and they accepted me. I made no secret of the fact that my grandfather was Admiral Byrd. and that might have helped."

This year Mr. Breyer, 26 years old, was promoted to leader of the construction crew finishing a station at the South Pole.

"As a child I lived in Los Angeles, but used to spend summer vacations in Boston with my grandfather," he said. "He died when I was 8, but I remember his good nature and jokes and his love for this place. I had always thought the only way to get here was in the Navy until I saw that ad."

Another way of earning a priceless trip to Antarctica these days, apparently, is by raising one's hand at the right time in an undergraduate college class.

A number of students in their early twenties, some of them women, went this year merely by responding to calls for volunteers. Some have no intention of continuing the line of studies and regard their presence more as a novelty than as a privilege.



The New York Times

Robert Byrd Breyer, grandson of Adm. Richard E. Byrd, answered a want ad to find a job as a laborer in Antarctica.

Though visitors to and residents of Antarctica are screened physically and psychologically, a few grow to hate the strange environment of six-month days and six-month nights, of hurricane-strength winds and bitter cold and lifeless desolation.

Misfits sometimes become drunks. Others bury themselves in underground tunnels and bunkers, where there are bars, libraries, restaurants and even a bowling alley, never looking at the grandeur of the world outside for weeks at a time.

"But you can bet that most of the people who end up in Antarctica love it passionately or they wouldn't be here," a base executive said. "And basically, those are the people we want."

The New York Times/Malcolm W. Browne

Bust of the polar explorer at McMurdo Station

Antarctica is mostly lifeless, but the few animals living along its periphery continue to enchant all comers. The penguins, especially the little Adelies (named for the wife of Capt. Dumont d'Urville of the French Navy, who led an expedition to Antarctica in 1837) are as inquisitive, friendly and appealing as their caricatures.

For newsmen, visiting the Wedell seals proved the main animal attraction.

During the summer season mothers wean their pups and wander away from the rookeries to eat and get back to normal. The grief-stricken pups, which for the most part have not learned to catch

fish for themselves, howl with unhappiness and try to get passive human beings to help fill the emotional and gastronomic void.

One such pup tried to follow me a long distance, moaning as he waddled over the ice and making me feel extremely guilty. In not adopting him I comforted myself in the knowledge that Wedell seals do not thrive in captivity. They normally chew ice, and when confined in concrete they chew that too, ruining their teeth and jaws.

Despite the nearly universal use of tracked snow vehicles, airplanes and helicopters in Antarctica, the husky dog is still pulling enormous loads.

The dog sledge was retired long ago by Americans in Antarctica, and next year the British base at Adelaide Island off the Palmer Peninsula will trade in its huskies for "tin dogs"—motor tobagans.

But the husky is still in service with Japanese teams, and New Zealand's Scott Base, which has 17 dogs of its own, plans to acquire the British huskies.

"I suppose we have to admit that it's partly a matter of tradition," a New Zealander said. "Antarctica without huskies just wouldn't seem right."

According to Nicholas Round-Turner, one of the Scott Base team, the husky is still valuable.

"A 90-pound dog can pull 150 pounds 22 miles a day," he said, "and his engine doesn't stall at a tough moment. I doubt that New Zealand will ever give up the husky."

The Antarctic dog sledge, lightly built of wood, has not changed in design or construction in centuries—a fact that especially endears it to traditionalists.

Teams of 9 or 11 dogs are usually used. They are fed fresh seal meat, table scraps and the dried meat known as pemmican. While they are constantly fighting each other, they are very affectionate toward human beings and appear to enjoy pulling sledges.

The dogs live outdoors, even during the bitter cold and blizzards of the Antarctic winter. In heavy storms they curl up and let the snow drift over them to form an insulating blanket.

The awe of tradition that pervades the precarious human communities on Antarctica even today is partly the result of a climate that freezes history, visibly and permanently.

The marks of all the early explorers who came to the lifeless ice desert were left indelibly. The most startling is a wooden cabin at Cape Evans, the last camp built and used by Capt. Robert F. Scott of the British Navy before he and four companions set out for the South Pole in 1912.

All five reached the Pole, only to find that the Norwegian explorer Roald Amundsen had reached it by another route a month earlier. All five Britons perished on the way back.

Despite the passage of the years the Cape Evans hut has scarcely changed apart from some weathering. Outside, the mummy of one of Captain Scott's huskies lies near its water dish. There is still hay in the pony stable, frozen seal meat in the storage room, piles of clothing strewn around, letters and magazines showing no signs of age, and many shelves of canned food, including Huntley & Palmer biscuits.

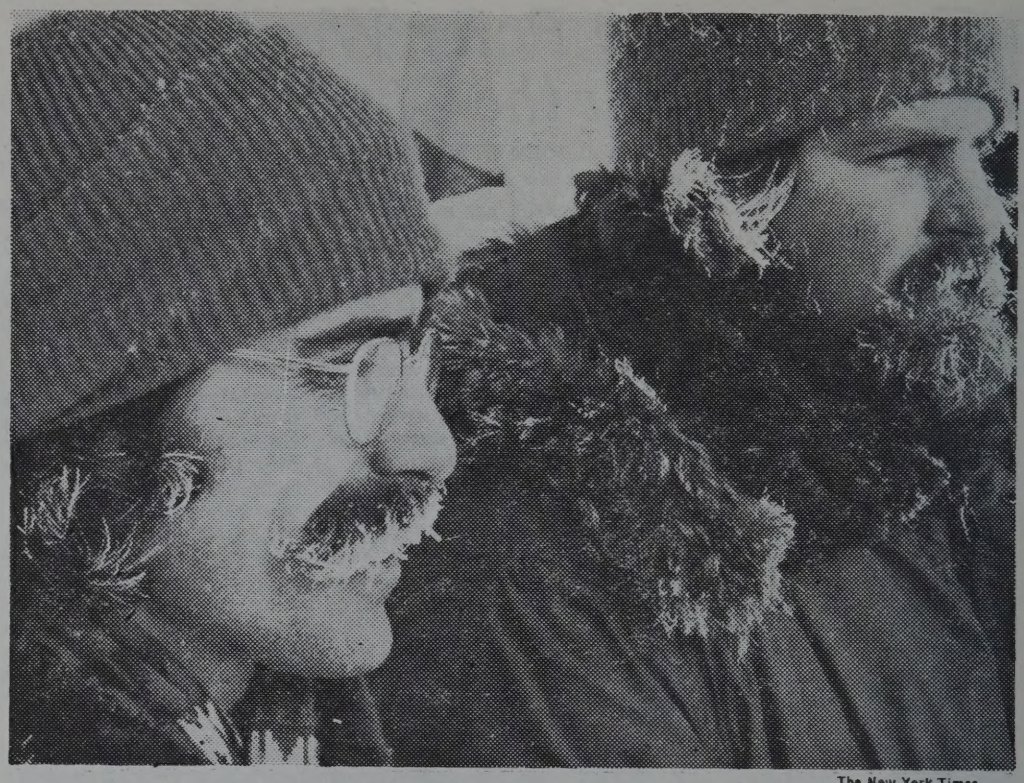
Laboratory equipment and homemade seal-blubber lamps have rusted, but in general it is easy to imagine the doomed party as having left a few hours before.

The few animals that venture inland from the relative security of the sea are also often preserved eternally. Near the New Zealand camp at Lake Vanda, in a snowless "dry valley" 40 miles from the coast, the emaciated bodies of crabeater seals are often found.

According to the camp leader, Des Coe, carbon dating had been done on some of the carcasses and they turned out to be more than a thousand years old.

The human, animal and inanimate relics are treated with reverence by nearly everyone, and there has been little vandalism or littering.

"We all of us pray that Antarctica will remain as it is," a New Zealander said, "and not just because we feel Scott's ghost wherever we go. Man's purity is somehow tied up to this place, and must be guarded."



The New York Times

Frost coats the mustaches, beards and hair of men at the South Pole. Summer temperatures there hover around minus 10 degrees; in winter, they plunge to minus 100.

Cape Bird chick

(Special Crspdt. N.Z.P.A.)

SCOTT BASE, Dec. 10.

The first penguin chick of the season was born at Cape Bird yesterday.

Mr Paul Sagar, of the Canterbury University field stataion, reported the birth by radio to Scott Base.

The Adelie penguin rookeries at Cape Bird, which have been under study by biologists at the nearby station for sveeral years, have ben filling rapidly as the birds migrate back to their traditional nesting sites.

The population is now about 2000 birds.

Biscuits for Antarctica

A record number of homemade biscuits will be delivered to New Zealanders in the Antarctic this Christmas. Fifteen members of the Canterbury branch of the Antarctic Society have baked 133 dozen biscuits and four large fruit cakes, and these will be flown to McMurdo Sound by United States Navy Hercules.

It is the twelfth year that the branch has provided home-made fare. Some of the biscuits will go to Vanda Station, and the rest will no doubt be distributed where possible to parties in the field.

Antarctic voyage of discovery

Four drill holes off Antarctica reveal past currents, confirm ancient glaciation.

Like a scholar delving into an ancient original manuscript, the scientists on the Glomar Challenger's epic voyages in the Deep Sea Drilling Project decipher the record of the earth's past from cores extracted beneath the ocean's bottom.

In early 1973, the Glomar Challenger drilled for the first time in the waters off Antarctica, discovering, among other things, that glaciation had begun on the continent 20 million years ago, far earlier than thought (SN: 3/31/73, p. 204).

Now the drilling vessel has completed its second Antarctic voyage. Despite almost unending mechanical malfunctions plus occasional 60-mile-an-hour winds, high seas and snow squalls, the Challenger managed to drill four holes and uncover an impressive variety of scientific information. It confirmed the 20-million-year-ago glaciation, discovered an immense layer of iron-rich sediments, identified once-vigorous sea-bottom currents, and detected evidence for a former strong circumpolar current.

The voyage, Leg 35 of the DSDP, was conducted in February and March. Co-chief scientists were C. D. Hollister of the Woods Hole Oceanographic Institution and Campbell Craddock of the University of Wisconsin. The National Science Foundation funds the project; the Scripps Institution of Oceanography manages it.

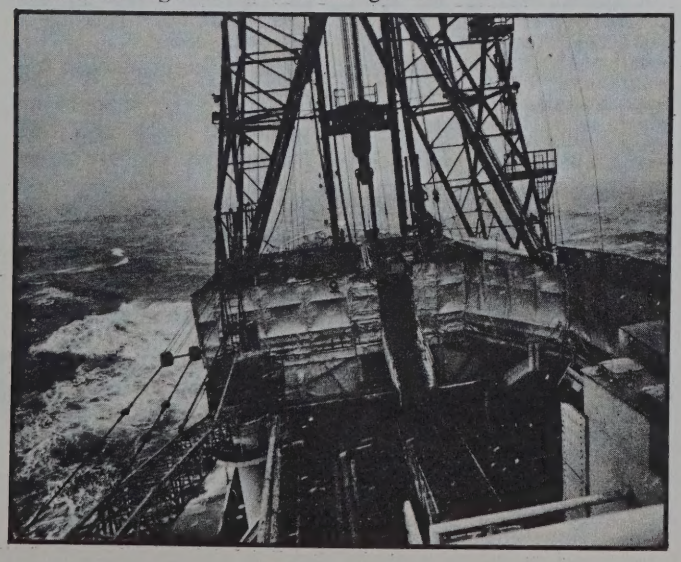
Like sand barges carrying a load of gravel out to sea, ice shelves that break off the Antarctic continent and become icebergs carry pebbles and other debris out onto the ocean. When the floating ice eventually melts, this ice-rafted debris sinks to the bottom and becomes incorporated into the ocean sediments. Its presence in sediment cores is an unmistakable sign of continental glaciation. The 1973 Antarctic drilling found such glacial debris in sediment layers 20 million years old, and now the 1974 voyage has found the same thing.

But there are some puzzling gaps in the glacial record, and Leg 35 may have helped discover why. The four holes drilled this year and the eight last year differ in their glacial record according to position. The key seems to be the 63-degree line of south latitude. All the sites south of 63 degrees had evidence of glaciation back 20 million years. All the sites north of 63 degrees had evidence of glaciation back only to 5 million years. "Looking at this," says Scripps geologist N. Terence Edgar, the chief scientist for the entire DSDP, "we feel there was a strong circumpolar current [begining about five million years ago] that inhibited the northward flow of icebergs."

Another finding sure to cause considerable interest is a vast layer of iron-rich sub-bottom sediments. Earlier voyages of the Challenger found iron-rich sediments in the equatorial Pacific. The latest Antarctic voyage found the same thing. "We found iron-rich sediments of exactly the same description as found earlier in the equatorial Pacific," says Edgar. "It may be of immense value and be spread over a tremendous area." It is not yet known if the Antarctic iron-rich sediments are continous with those in the equatorial Pacific, but, says Edgar, "They could be of major economic significance."

Difficulties of exploitation would be immense, however. The iron-rich sediments were 400 to 700 meters beneath the ocean floor, which is itself below 5,000 meters of water.

The Challenger's southern voyage also found that thick sediment accumulations off the Antarctic coast have been sculpted by bottom currents for the last 30 to 40 million years. This process may have begun when South America and Antarctica separated, opening a passage for the cold water of the Weddell Sea to flow westward along the continental rise of West Antarctica. This current was found to have decreased in intensity since its inception. □



Scripps

Science News, May 18, 1974

Snow squalls, high seas, strong winds and pesky mechanical difficulties cut heavily into time for drilling during the Glomar Challenger's second Antarctic voyage.

How ice tells Soviets what past was like

Ice samples from a hole drilled in the Antarctic have given Soviet scientists an insight into changes in the earth's climate over the past 20,000 years, according to papers published by the U.S.S.R. Academy of Sciences.

The borehole, begun four years ago at the Vostok research station, is now about one kilometer deep. Eventually, the Soviets hope to penetrate the entire glacier, which is some 3½ kilometers thick.

The scientists claim that the 500-meter layer of ice they have been studying has grown during the past 21,000 years. And, they say, examples taken from the bottom of the hole show that at one time the temperature of the Antarctic was five to six degrees lower than it is today. There was a period 14,000 years ago when the temperature rose sharply, and it was stabilized 10,000 years ago.

Scientists spent happy winter on the ice

Sept. 6

The first two women scientists to spend winter in Antarctica, Dr Mary Alice McWhinnie and Sister Mary Odile Cahoon, would be delighted to go back again if they had the opportunity.

"I can't say any other winter I remember was a happier one," said Dr McWhinnie, and Sister Cahoon agreed with her.

Both the Americans looked fit and had healthy complexions and neat haircuts, trimmed by the local barber at McMurdo Sound, Chief J. Zimmerman. They used special creams, which they had taken with them, to shield their faces against fierce winds.

"It was not a matter of cosmetics, but to save the integrity of the skin, which became very dry," Dr McWhinnie said.

Neither of the women had any misgivings at any time about spending eight months in an isolated "all-male" community.

"The men (about 127 of them) accepted us and were very kind and generous," Dr McWhinnie said. "Scientists are scientists whichever their sex and there is no reason why healthy women should not cope with the conditions there."

The party of scientists, led by Dr McWhinnie, had a heavy programme of work studying mainly krill, a minute shrimp-like crustacean which teems in the Antarctic Ocean and is swallowed in tons by baleen whales.

There was little leisure time.

Sister Cahoon put on her skis for a run only once and did not get nearly as much knitting done as she thought she might.

"My feet nearly froze on the skis," she said, "and in any case I preferred to go down into the ice caves instead of trying any more ski-ing. I can always do that at home."

Sister Cahoon, Dr McWhinnie and a Polish member of the team, Dr S. Rakusa-Suszcewski, gave lectures on aspects of their work.

"We had hoped to develop a lecture series, but there was not time," Dr McWhinnie said.

They were there to work and work they did, never missing an opportunity to get on with the job.

"But we believe the work we accomplished was important from the point of view of disclosing the mechanism of low temperature adaptation by a wide range of marine organisms — relatives of jellyfish to higher fish, including several crustaceans such as krill and starfish," Dr McWhinnie said.

Winter was the better time for sustained, steady work, she added.

"In summer it is a dizzy place down there. People are coming and going all the time, all so busy. It is like a three-ring circus."

The women did not feel cut off from "civilisation."

Both women will now return to their jobs, Dr McWhinnie to De Paul's University, Chicago, where she is a professor of biological science, and Sister Cahoon to the College of St Scholastica, Duluth, Minnesota, where she is a teacher. It would not be easy to settle down at first, they said.

"It is a matter of adjusting to a very different series of responsibilities, horsing around and doing a thousand things instead of getting on with a particular kind of work, as we did at Antarctica," Dr McWhinnie said.

Frenchmen sail for Antarctic

(New Zealand Press Association)

PARIS, December 6.

Thirty-four Frenchmen, members of the twenty-fifth French Antarctic expedition have sailed from Hobart aboard the polar ship Thala Dan for Terre Adelie. The group, led by topographical engineer, Mr Claude Volck, was followed by a second group of men. But while the first group will spend all the next winter in the Antarctic, the second group will stay in Terre Adelie only during the southern summer months of December to February.

It was on September 20, 1949, 25 years ago, that a group of 12 men left Brest aboard the Polar ship Commandant Charcot taking the first French winter Antarctic expedition to Terre Adelie. Since then, with the exclusion of the period 1953 to 1955, France has sent a mission each year to the Antarctic. Since 1956 the winter camp has been established on Petrel Island, just off the Antarctic continent.

It was on this island that was set up, during the International Geophysical Year, the Dumont d'Urville base where, year after year and depending on the credits available, new buildings and laboratories are added and the living quarters improved.

The new winter expedition is called "TA.25." The arrival is scheduled for about December 20, if their ship can make its way through the ice which is usually broken up at this time of the year.

Their arrival will touch off celebrations among the old winter team, led by Mr Bernard Barriquand, who have been totally isolated from the rest of the world for months and whose only news from home has come by brief telegraphic messages.

While part of the new team unloads the nearly 600 tons of material, the other will immediately set to work repairing and extending the base during the brief summer months when the temperature rises to a relatively mild one of two degrees above freezing point.

The work comprises renovation of the bathrooms and sanitary installations, modification of the kitchen, completion of interior arrangements, revision of the radio aerial, the building of two new shelters, the construction of a new platform for the air force supply helicopter, and a complete revision of the sea water desalination plant.

An important programme of scientific work will be carried out — the biologists will tour the archipelego, checking on the 45,000 penguins, observing and ringing some.

Further glaciological measurements will be taken along the coastal region, comprising maintenance and recording of markers indicating the speed of ice movement and accumulation of snow.

Topographical work will be carried out at Cape Prudhomme to establish plans of ice free rocks on which more buildings could be erected. A road for motor vehicles will also be traced out.

Radioactivity measurements will be carried out at different altitudes as well as a photographic survey.

A special mission, led by Robert Guillard, will carry out ground preparations on behalf of the American polar programme office of the National Science Foundation which wants to recover the wreckage of a C130 aircraft lost in 1971 about 200 kilometres from the French base.

The French will prepare a landing strip and carry out weather observations and ensure radio liaison for the arrival of an American reconnaissance aircraft.

All this work will be carried out near the Dumont d'Urville base while a small group will operate about 1000 kilometres away, carrying out preliminary studies for more extensive operations to be carried out the next winter.

Antarctic Research

M.A. McWHINNIE

The Marine Technology Society
Journal June 1974

Although Antarctica is the coldest place on earth, serious and vigorous research programs are conducted in all the natural sciences by United States scientists and technicians both on the continent and in the seas around it.

This continent centers on the southern end of earth and lies almost wholly within the Antarctic Circle at 66° 37′s. It has an ice cap with an average thickness of one mile and occupies some five and one-half million square miles. The continent, an inhospitable and nearly abiotic land mass, is surrounded by some 12 million square miles of southern circumpolar waters which are strikingly rich in animal life.

Presently, the United States conducts research from its four permanent stations, McMurdo, Pole, Siple and Palmer; a surface camp remains at Byrd Station, and numerous parties criss-cross the continent in pursuit of polar knowledge. The seas are currently studied by use of Coast Guard ice-breakers and the ship R/V *Hero*. Through 10 highly productive years (1962 to 1972) the research ship *Eltanin* served as a multidisciplinary, well-equipped platform for the conduct of studies in physical oceanography, geology, marine chemistry, meteorology, upper atmosphere physics and biology. Through that time, 55 cruises totalled 2,833 days, and more than 370,000 nautical miles were traversed during which study was conducted in the Weddell and Scotia Seas, the South Atlantic Ocean, through the South Pacific and into the western reaches of the Indian Ocean. The work accomplished throughout those years is the subject of one complete issue of the *Antarctic Journal of the United States* (Vol. 8 No. 3, 1973). The area covered by that ship is shown in figure 1. Under a cooperative arrangement with Argentina, this ship will return to south polar waters and studies will be resumed in 1974 to continue toward the achievement of the original goal of a complete south circumpolar investigation of the biota and the physical and chemical phenomena of that least known part of the world's ocean.

While U.S. expeditions were made earlier to the Antarctic, coherent and comprehensive U.S. research projects have been continuous only since the International Geophysical Year of 1957-1958. Called collectively the United States Antarctic Research Program, they are funded by the National Science Foundation. Logistics support is procured from the U.S. Navy and, increasingly, by contract with private firms.

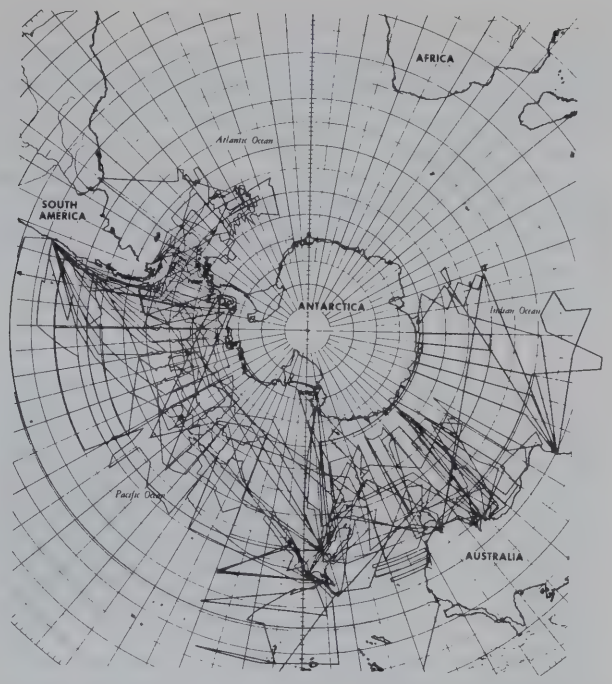


Figure 1. Tracks of 55 Cruises of the USNS *Eltanin* completed in south circumpolar waters between 1962 and 1972.

Freedom of Access

The Antarctic Treaty, drawn in 1959, provides a strong base for the hope eloquently stated by Richard E.

Dr. McWhinnie's article is from a lecture presented to the Great Lakes Section of the Marine Technology Society, November 15, 1973.

Figure 2. Late austral summer view of McMurdo Station on Ross Island, Antarctica.
Photo: Courtesy of the National Science Foundation.

Byrd after his first expedition in 1928 that this Antarctica shall be set aside for peace. The original signatories to the treaty were Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, the Union of South Africa, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America; acceding to the treaty since its 1961 ratification are Czechoslovakia, Denmark, The Netherlands, Poland and Romania.

Dr. McWhinnie and Sister Mary Odile Cahoon study the respiration of Antarctic invertebrates at McMurdo Station. They will be the first women to remain the winter months at McMurdo Station.

Official U.S. Navy photograph by PH2 E. R. Smith

The treaty reserves Antarctica exclusively for peaceful purposes. Military activities, aside from support of peaceful functions, are expressly prohibited. International cooperation, expressed in joint scientific programs and in exchange of data and personnel, shall be freely practiced; no acts or activities during the tenure of the treaty shall constitute the basis for any claims of sovereignty; nuclear explosions are prohibited; free exchange of observers among treaty nations shall be the right of any party to this treaty, and observers shall have complete freedom of access anywhere in Antarctica. This international act establishes the foundation for the continuation and development of further cooperation on the basis of freedom of scientific investigation, and it supports protective conservation of the Antarctic.

Scientists from Argentina, Australia, Chile, Japan, Germany, New Zealand, South Africa and the USSR have participated in U.S. programs and have conducted studies at U.S. Stations or aboard our research ships; a Polish scientist will work in marine biology at McMurdo Station during 1974. Reciprocally, U.S. scientists work at Russian Stations and aboard their research ships.

Antarctic Shrimp

Among the fauna native to the antarctic regions are seals, whales, penguins and winged birds,all of which derive their food from the surrounding seas. These waters supported the stock which became the basis of the large whaling industry from the early 1900s until excessive exploitation so decimated the whale populations as to render such efforts uneconomical. However, at least two nations continue to harvest whales and, in addition, have turned to harvesting the principal food upon which they once fed, krill. This unique shrimp of antarctic waters, *Euphausia superba,* represents one of the largest protein supplement in animal and perhaps human food. These animals occur in dense swarms of great size often reaching several square miles in area. With appropriate netting methods from a small fleet of ships, significant harvests could be made. Over 200,000 tons of krill are reported to have been taken during the austral summer of 1972/73.

Only intensive research concerning life cycles, reproductive rates, survivability, annual yields of a harvestable size and density of age classes of krill will permit wise and non-decimating use of this source of animal protein.

While luxuriant in animal density, the antarctic marine ecosystem is relatively less diverse than others of the world's oceans. Characteristic of ecosystems of low diversity is a relatively low degree of stability; perturbations within such systems result in more widespread effects on higher levels of organisms which depend upon a primary food source such as is the antarctic krill population. Only intensive research concerning life cycles, reproductive rates, survivability, annual yields of a harvestable size and density of age classes of krill will permit wise and non-decimating use of this source of animal protein. It can be anticipated that the near future will show an increase in the intensity of study of this significant pelagic and oceanic population on an international basis.

The bottom dwelling organisms (benthic fauna) also represent a rich community and they are known to be more dense near the continent's edge. Common are sponges, soft corals, polychaete worms, brachiopods, bryozoa, molluscs and echinoderms. Quite expectedly the dominant species vary according to the character of the bottom sediments and currents. The former range from exceedingly fine glacial silts as in front of the great Ross Ice Shelf, to completely rocky bottoms and swift northward currents as along the east side of the Ross Sea off the shores of Cape Colbeck.

Looking in a south-westerly direction from the Star Lake area with McMurdo Station and Observation Hill in the midground and part of the Royal Society Mountains in the background.

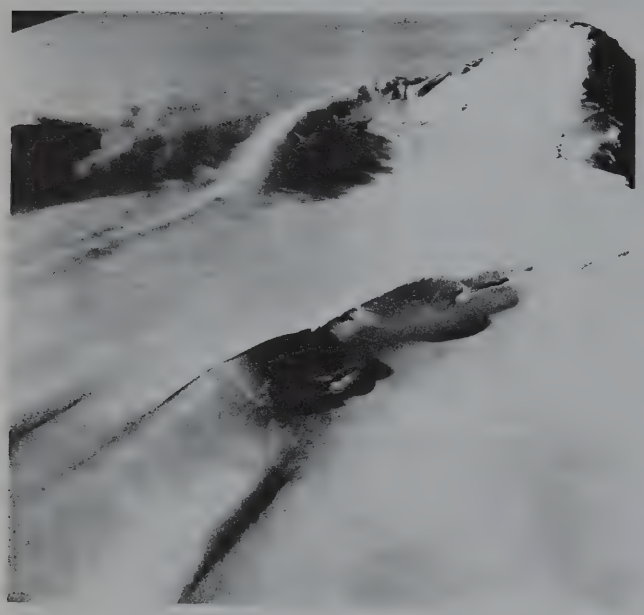
Further Studies Essential

A luxuriant bottom fauna is found also in the Bransfield Straits west of the Antarctic Peninsula and in the Weddell and Scotia Seas. A rich benthic fauna reflects high productivity of surface waters and their contribution to organic sources which are essential to support that fauna. The elucidation of the details of energy flow through the antarctic ecosystem has been the object of U.S. biological studies for many years. This information coupled with a

National Science Foundation Chalet with the flags of the countries of the Antarctic Treaty flying in the foreground.

Weddell seal and pup at the Turtle Rock seal colony at the edge of the Pressure Ridge.

more complete understanding of the biology of krill must be in hand if man is to use these biological resources wisely. Penguin and seal populations are also under extensive investigation as are the biochemical mechanisms of low temperature adaptation of a number of different species of invertebrate and vertebrate animals. Since the beginning of the United States research effort in south circumpolar waters, animal collections have been maintained at the Oceanographic Sorting Center of the Smithsonian Institution in Washington, D.C.



Aerial photo taken over Queen Alexandria Range.

In contrast to the biological populations in its surrounding seas, the antarctic continent is extremely poor in native species. Seals and birds breed at the continent's edge but derive their food from the sea. Some 60 species of wingless insects have been described from micro-niches located in dry outcroppings usually near the coast, but no native higher organisms have colonized this frozen land mass. Study of freshwater lakes, permanently frozen over, has just begun. In contrast, geology, glaciology, upper atmosphere physics, and meteorology have been the principal areas of investigation at the permanent stations on the continent.

Left to right, Sister Odile, Dr. McWhinnie and Dennis Schenborn. They are collecting krill samples from a hole in the solid sea ice approximately three miles from McMurdo Station.

Adult Adelie penguin in the Cape Royds rookery on Ross Island, Antarctica.

Hut Point on Ross Island stands as a sentinel to the north end of McMurdo Station, the main U.S. scientific and staging center for its other stations and for field parties working in Antarctica. The personnel working at, and those passing through McMurdo, range from a little over a thousand in the austral summer to about 200 through the southern winter.

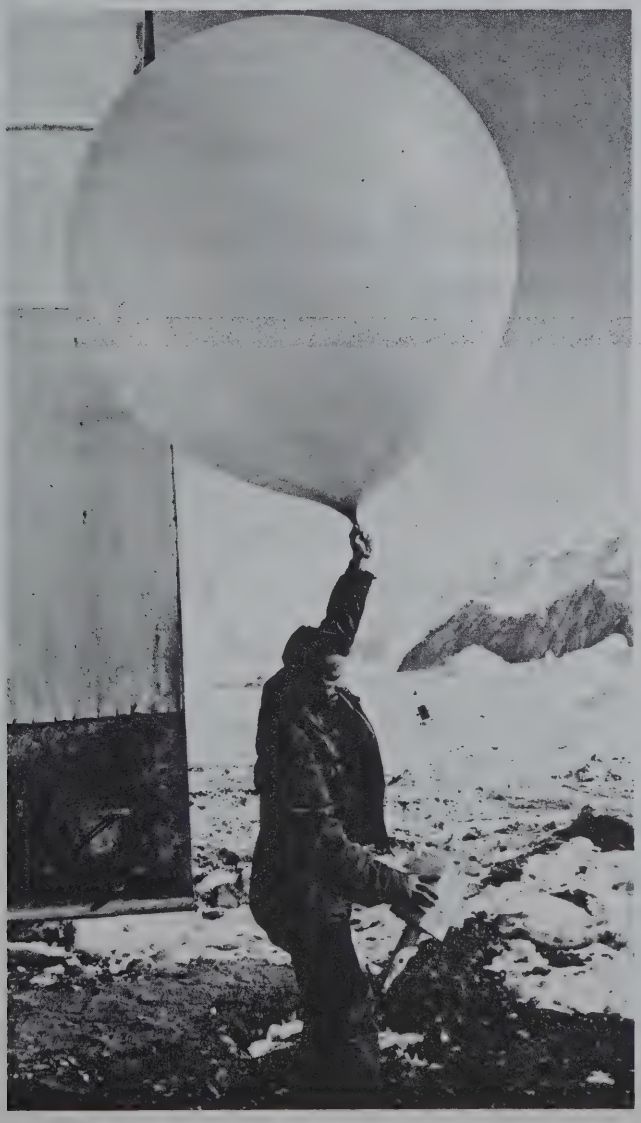
McMurdo Station is served throughout the austral summer by airplanes which land at Williams Field on a permanent ice-sheet, the McMurdo Ice Shelf, which extends south and to the west between Ross Island and the Royal Society Mountains of the Transantarctic Mountains. A traveler from the air field to McMurdo Station passes Scott Base of New Zealand, only two miles from McMurdo; both stations lie in the shadow of the glacially covered Mt.

Erebus, an active volcano two and one-half miles high.

McMurdo Station (Figure 2) is a conclave of buildings including the National Science Foundation's "Chalet," an administrative building providing an auditorium and offices with radio communication to the U.S., a naval administration building, power plant, post office, maintenance buildings, a field party supplies center, dining and housing facilities, a chapel and the central reason for the station, its scientific laboratories. The Eklund Biological Center competes with many well-equipped and efficiently designed laboratories in the United States and permits a diversity of biological and biochemical studies to be conducted near the site of biological collections in adjacent McMurdo Sound.

While it is less than 20 years since the United States has been engaged in extensive investigations in the Antarctic, an impressive body of knowledge has been developed. It seems clear that this work will continue, and perhaps at an accelerated pace, as discoveries serve as stimulants to increased investigations and as more nations enter into the pursuit of the unknown which still characterizes the seventh continent on Earth.

Victoria Land Trans-Antarctic Mountains near the Dry Valleys.



AG1 W.H. Murphy launches a weather balloon over Hallett Station, Antarctica.

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MARY ALICE McWHINNIE received her Ph.D. degree in physiology from Northwestern University in 1952 and has been on the faculty of De Paul University since that date. She has been engaged in studies of crustacean physiology, both freshwater and marine. In 1962 she made her first trip to study south circumpolar crustaceans and returned in 1965, 1969 and 1972 to work aboard the USNS *Eltanin*, the National Science Foundation's research ship working in south polar waters. Dr. McWhinnie is presently, January to September 1974, studying the marine biota of McMurdo Sound at McMurdo Station, Ross Island, Antarctica.

Japan Antarctic Team Finds 82 Meteorites

TOKYO, Dec. 20

The Japanese Antarctic wintering team has collected 82 meterites in Antarctica, according to a report reaching the Education Ministry here

The discovery was made in an area extending over nine square kilometers near Yamato Range, 300 kilometers south-southwest of Japan's Showa Base.

It was the first time that so many meteorites had been discovered in Antarctica at a time the ministry said.

The team's Yamato mountains survey group established a base camp near the range on Nov. 24 and searched the area.

The group found 82 meteorites, five of them larger than 10 cm. across. The biggest one was shaped like a pumpkin and measured 20 cm. in diameter and weighed four kilograms.

All of the meteorites had been lying scattered over the surface of the ice. Seventeen of them were discovered in an area within a radius of 50 meters.

The number of meteorites discovered so far by foreign expedition teams totaled only six—one by a French team in 1912 near Adelie Coast, two by a Soviet team in 1961 near Lazarev Base, three by an American team in 1964 in the Thiel Mountains and near the Neptune Range.

A Japanese team found nine meteorites near the Yamato mountains in November 1969, and another Japanese team discovered 11 others near the same area in November last year.

The concentration of meteorites in the area apparently resulted from a "meteorite shower," a phenomenon of a shooting star exploding and showering a particular place with splinters, Takeshi Nagata, director of the National Institute of Polar Research said.

Nagata and other experts of the institute believed that the finds would be of particular value. Such snow-preserved specimens are kept much freer from natural chemical action of the earth surface elsewhere, they said.

Items given for Antarctic wing

Sept. 27

The new Antarctic wing of the Canterbury Museum was planned to be a national and international display, Mrs Myrtle Duff told members of the Canterbury Travel Club yesterday.

Mrs Duff spent four months earlier this year visiting most of the 10 Antarctic Treaty nations with her husband, Dr Roger Duff, the director of the Canterbury Museum.

Christchurch had been the starting point for Antarctic exploration since the very early days, she said. The museum had received support from the New Zealand Government and museums and Antarctic experts in the countries they visited.

"We accomplished, we hope, quite a lot," Mrs Duff said. Many artefacts were given to them and promises of help made.

Although it was not possible to obtain genuine relics of the Amundsen's explorations in Norway they were able to obtain replicas used for a B.B.C. programme for a nominal price in London.

The whaling centre of Bedford, New England, was fascinating, she said. Thousands of ships' logs had been preserved, many of them mentioning New Zealand.

In New York, Lindblad Travel gave $US30,000 for the Antarctic wing.

Ice drillers well satisfied

Dec. 9

Four American scientists returned from the Antarctic last week satisfied that after drilling two 100m holes in the ice, they will be able to drill through the Ross Ice Shelf next year.

Dr Robert H. Rutford, the director of the Ross Ice Shelf Project, part of the United States Antarctic Research Programme, said the drilling was to obtain information on temperature changes.

There was now firm data to work with instead of just theory.

The drill used was light, and specially designed to be transported in a light aircraft such as the Twin Otter.

Dr Rutford said that he and his companions, Dr Chester Langway, a glaciologist, Mr John Rand, an engineer, and Mr Jim Cragin, a chemist, would be in the United States for a few months. Then they would go to Greenland, where they would test a larger drill before using it to drill through the Ross Ice Shelf later next year.

The larger drill, which would have to be carried in a Hercules, was expected to drill a 30cm diameter hole through the 450m-thick ice shelf in about a week. It is hoped to reach through the 275m of water beneath the ice and into the sediment.

The hole will allow various instruments to be sent down and samples brought up for analysis. The cores will be studied.

The team first drilled a 100m hole at the South Pole, then moved to about the middle of the Ross Ice Shelf to drill the second hole. The drilling team next year will include a New Zealand representation from the oceanographic section of the D.S.I.R. and Victoria University of Wellington.

Icebreaker Fuji Sets Out for Antarctica

Nov. 26

The icebreaker Fuji left Tokyo for Antarctica Monday with the 40 members of the 16th wintering team headed by Takao Hoshiai.

The ship is scheduled to reach the Antarctic late in December after calling at Fremantle in Australia for refueling.

The icebreaker will carry supplies and the 16th wintering team to Japan's Showa Base and will start on its way home late in February with the members of the 15th wintering team.

A feature of the 16th team is to place emphasis on a survey of the environment in the Antarctic. For this purpose, Tadaaki Watanabe, 28, a technical official of the Environment Agency, is taking part in the expedition.

Hoshiai said that the 16th team would bore the ice up to the depth of several hundred meters to study the history of the glacier.

Antarctic chess

July 11

The first of the winter's intercontinental chess tournaments for players at McMurdo Station will be held on Saturday morning against a five-man team from the Canterbury Chess Club.

In the last few weeks, the McMurdo team has accelerated its training programme with matches against teams on Campbell Island, at the South Pole Station, Vostok Station, and at Molodezhnaya Station, the main Soviet centre in the Antarctic.

The matches are played by radio.

The McMurdo team should have a good chance this year as it is headed by the Russian exchange scientist based there.

Seals Don't Drink Water

Fur seals do not drink. They absorb water directly through their pores.

Big Oil Deposits Indicated Beneath Norwegian Sea

By WALTER SULLIVAN
The New York Times

The discovery of high-quality oil at two widely separated sites in the Norwegian Sea has raised the possibility that extensive petroleum deposits lie beneath those deep-sea areas, between Norway and Iceland, far from what are generally considered territorial waters.

The most recent of the two finds was made by the American research ship Glomar Challenger, which, in August and September, drilled 16 holes deep into the floors of the Norwegian and Greenland Seas.

Among the many findings made by examining material withdrawn from these holes was evidence that a land bridge linked Europe and North America long after those continents had begun drifting apart.

This would explain the similarity between North American and European mammals of that period, from 30 million to 50 million years ago, a feature of the fossil record that has long puzzled scientists.

The second, earlier oil find was reported some months ago by Soviet scientists who had been working from the research ship Akademik Kurchatov northeast of Iceland. They found oil-bearing sediment at the southwestern end of the Jan Mayen Ridge, which reaches toward Iceland from Jan Mayen Island.

The Glomar Challenger hole that produced oil was one of five that the vessel drilled on the Voring Plateau. This seems to be a deeply submerged extension of the continental shelf some 200 miles off the Norwegian coast.

In the six years since the American ship began drilling into the floors of the various oceans, efforts have been made to avoid ruffling the feelings of other nations. Drill sites were canceled when nearby countries objected, and scientists from lands nearest the target areas have been included in the scientific team on board.

This time, however, Norwegian officials expressed dismay when news of the find reached them. It appears that a Norwegian participant in the project had notified the Norwegian Petroleum Directorate of the prospective sites. A reply, objecting to the site selections, was sent by ship mail and never reached the Challenger.

The episode has reinforced the fears of oceanographers that narrow national considerations are imposing ever greater limits on their activities. They point out that the Glomar Challenger program has become increasingly international in character. While the United States is its chief supporter, substantial contributions to its budget are made by the Soviet Union and West Germany.

The recent set of drillings, 38th in the series, was led by two scientists: Dr. Manik Talwani, director of the Lamont-Doherty Geological Observatory of Columbia University, and Dr. Gleb Udintsev of the Soviet Institute of Oceanology in Moscow. The ship is now drilling into the Atlantic floor on a section from Amsterdam to Rio de Janeiro.

The ship's oil-producing hole was drilled into an accumulation of sediment more than a mile thick beneath about 4,800 feet of water. The sediment has accumulated between the continental shelf to the southeast and a "retaining wall" of erupted rock to the northwest.

It now seems likely that this is an extension of the North Sea sediments that are also rich in oil and gas. The "retaining wall" is thought to have been formed by eruptions that occurred along the line of cleavage when Greenland and Norway first started pulling apart, some 55 million years ago.

The drill penetrated 1,504 feet before clear indications of oil forced a halt. The project doctrine requires a halt whenever oil is encountered so as to avoid an accidental "blow-out" leading to severe pollution.

However, gas, mostly methane with some ethane, was already evident in the hole at a depth of 165 feet. The oil was of low-sulphur content. In their preliminary report the scientists said:

"We do not know how much oil is present, and certainly have no knowledge whether it is present in commercially useful quantities. We do believe that the presence of oil in this deep-water area is very important, and could have far-reaching implications."

It is now suspected that the recently discovered oil reservoirs on opposite sides of the Atlantic were formed when that ocean was narrow and shallow. They would then have been split apart and carried, slowly subsiding, to opposite sides of that ocean, accounting for the deposits off New England, Nova Scotia, West Africa and the North Sea-Norwegian area.

In recent months vast deposits have been found beneath shallower areas of the Norwegian shelf, the most recent about 110 miles west of Sogne Fjord in 530 feet of water. Its recoverable potential has been put at two billion barrels of oil and 50 billion cubic meters of gas.

Among the conclusions based on analysis of material brought up from the recent drill holes is that ice sheets began discharging icebergs into the Greenland Sea at least 10 million years ago—not three million, as previously believed.

Holes were drilled on both flanks of the ridge that extends from Iceland to the Faeroe Islands and on to the British Isles. Evidence was found that this ridge stood above sea level 30 million years ago.

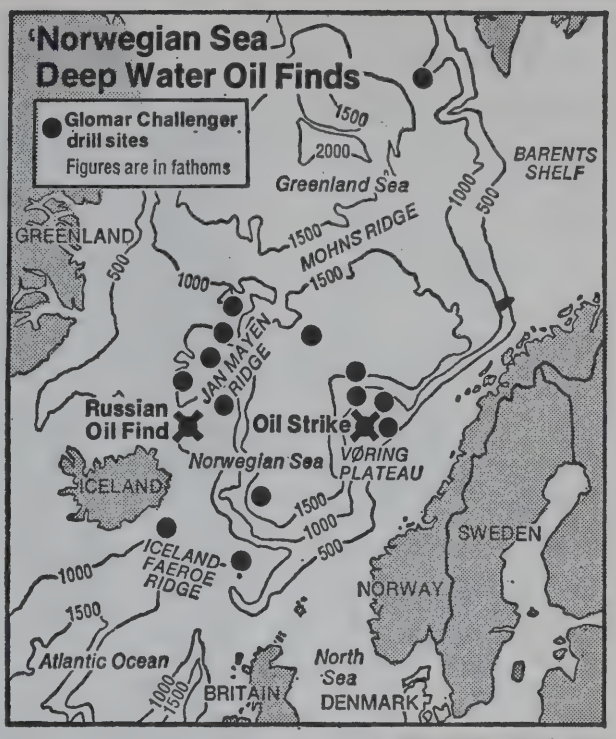
It was apparently a continuous land bridge, since microscopic fossils from its north flank show no evidence of a connection with the Atlantic Ocean of that time. The change in oceanic circulation that followed subsidence of this barrier, some suspect, may have set the stage for the subsequent ice ages.

The Soviet find of oil-bearing sediment on a ridge north of Iceland seemed to contradict the view that central oceanic areas have all been formed by the volcanic activity associated with opening of the ocean, and should not have sedimentary rocks.

The drill ship sank five holes into that feature, the Jan Mayen Ridge, and it was concluded that it was a continental sliver torn off the coastal shelf of Greenland some 25 million years ago.

It was then, according to the current reconstruction of those events, that the Norwegian Sea stopped opening and that such activity leaped 100 miles to the west, pulling the Jan Mayen Ridge away from Greenland.

Iceland is the current focal point of spreading geological activity in the North Atlantic. Layers of volcanic ash were found at all levels in all 16 drill holes, being most marked in the holes nearest Iceland. It thus appears that the volcanic eruptions that have marked that island's recorded history continued without major intermission since its birth.



The New York Times/Oct. 28, 1974

Drilling into the Norwegian Sea has disclosed an oil deposit in the sea floor beneath 4,800 feet of water and has shown that the Iceland-Faeroe Ridge once linked Europe and North America.

Lots of Ice

The Greenland icecap a great flat dome crevassed on the edges, covers 700,000 square miles and in places is more than 11,000 feet thick, according to the National Geographic Society.

Ancient Whale Meat Cache Found

Anchorage Daily Times
Dec. 24

FAIRBANKS — An ancient cache of whale meat has been found on St. Lawrence Island near where the frozen, well - preserved body of an Eskimo woman estimated to be some 1,600 years old was earlier discovered, and scientists are using two techniques to determine the age of the meat.

The meat cache was uncovered by Nathan Numwik of St. Lawrence Island village of Savoonga while digging for fossil ivory in the permafrost of Kialegak Point near Southeast Cape.

The discovery in August was brought to the attention of a party of National Park Service and University of Alaska anthropologists mapping former dwelling sites nearby.

In addition to the whale meat, the cache also contained a walrus hide rope, sealskin poke containg carved ivory birds, and a fox carcass, said George Smith, a National Park Service employe who is doing graduate work in anthropology at the University of Alaska.

Other members of the party were Zorro Bradley, a National Park Service research anthropologist and adjunct professor at the university, and Ron Kreher and Terry Dickey, also doing graduate work in anthropology.

Samples of the whale meat have been sent to the Smithsonian Institution for radio - carbon dating and to Dr. Aidan Cockburn, president of the Paleopathology Association of Detroit, for dating by a new amino acid technique.

All living tissues absorb radiocarbon. Since this element dissipates at a known rate, it is possible to determine the approximate age of an organism by its radiocarbon

This was the technique employed by the Smithsonian Institution and Physics Department of the University of Pennsylvania to determine the age of the body found at the Kialegak site on St. Lwrence Island. Working independently, the two institutions developed overlapping age range estimates.

"It was a beautiful correlation," said Bradley.

Residual amino acids undergo change as fossil protein degenerates. The new dating technique consequently is based on the condition of the residual acids in the material and rate of its degeneration. The current tests of the whale meat will enable scientists to cross - check this new dating method against the older radiocarbon method.

A portion of the meat also was provided William A. Galster, associate zoochemist at the University of Alaska's Institute of Arctic Biology, who intends to compare the amount of heavy metals in the tissue with that in the tissue of freshly - taken marine mammals.

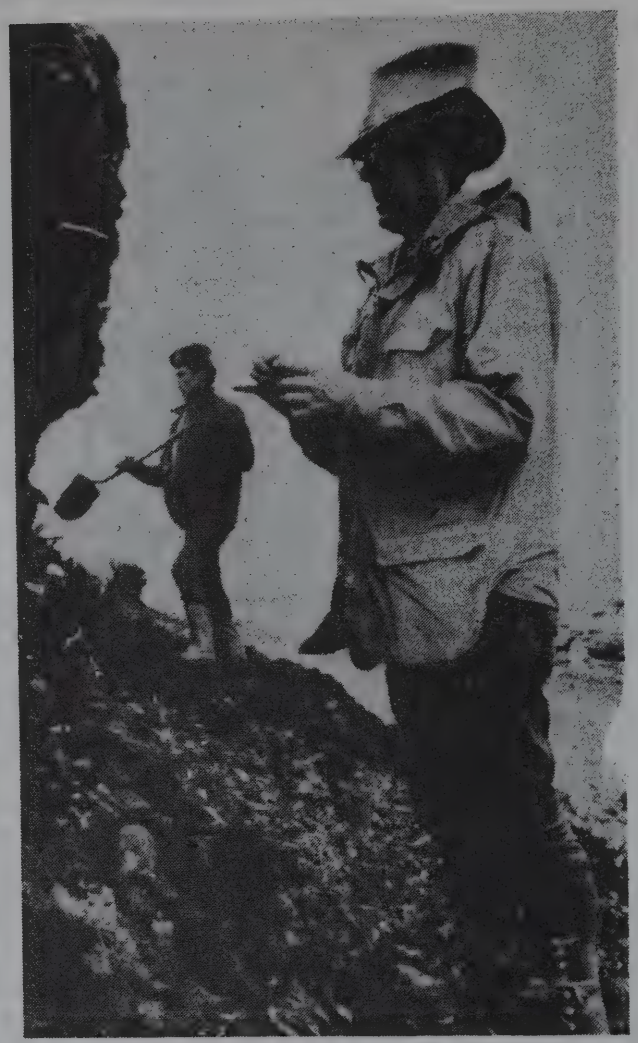
The naturally mummified woman's body was found in 1972 in Eskimo hunters as it was washing out of a low cliff on the Kialegak Point beach. The hunters removed the body from the cliff, reburied it in permafrost on the tundra above, and informed Bradley of their discovery. With their help he disinterred the body and arranged for its shipment to the Fairbanks campus where it is being preserved in freezer facilities. Ultimately it will be returned to St Lawrence Island for final burial.

Smith and Dr. Michael Zimmerman of the University of Pennsylvania, who made a study of the tatoos on the arms and hands of the mummy, in a report noted the absence of any tatooing on the face. "This is unusual," they wrote, "in that on St. Lawrence Island it was customary for Eskimo women to have chin and - or cheek tatooing."

It was the finding of the body that led to this year's archeological work and the new discoveries at Kialegak Point. In addition to examining the cache of whale meat and other items, the National Park Service and University of Alaska field party also interviewed a number of residents of Savoonga to try to learn more about the former residents of Kialegak Point.

"A few interesting stories were told about the Kialegak people, but for the most part the people of Savoonga knew little about this area or its people," say the reserachers in a preliminary report.

A literature search also turned up little, and the researchers concluded from their findings, "Even from this precious little we can most definitely say that the material culture stands apart from the rest of Alaska.



THEY'RE LOOKING INTO PAST

Anthropologist Zorro Bradley, foreground, and Bradley Gologergen of Savoonga examine low coastal cliff at Kialegak Point on St. Lawrence Island where woman's body estimated to be 1,-600 years old was recently discovered. (National Park Service Photo)

Soviet Scientists Find Clues To Past of Alaskan Tribes

MOSCOW, Nov. 2 (UPI) — Soviet scientists have discovered 18th-century writings that they say could be of great use in the study of the language and traditions of the Indian tribes of Alaska and the Canadian Pacific coast, Tass, the official press agency, reports.

The agency says that unpublished notes, diaries and letters of Russian explorers of the late 18th and early 19th centuries have been unearthed in the archives of the Academy of Sciences of the U.S.S.R. The explorers were employed by the Russian-American Company.

The documents describe in detail the economic system, customs and beliefs of tribes of the Athapaskan group, according to Tass. "Particularly valuable, in the opinion of specialists, are dictionaries and comparative tables of the Athapaskan languages compiled by the explorers," the agency says.

The annual caribou migration in McKinley National Park, sometimes numbers as many as 5000 animals in a herd. They travel several hundred miles in their annual circuit, wintering outside the park and returning in the spring for two or three months before moving out again.

Alyeska Ends Preparation Year

Anchorage Daily Times
Dec. 31

The year 1974 was a year of preparation for Alyeska Pipeline Service Co., builders of the trans-Alaska pipeline. And 1975 will be the year pipeline construction begins.

After years spent planning and designing the 48-inch diameter pipeline to deliver crude oil from Prudhoe Bay on the Arctic coast to the ice-free port of Valdez on Alaska's south coast, Alyeska found 1974 an important year of getting ready.

The firm built roads, airfields and construction camps along the 798-mile pipeline route.

Purchase orders were placed for millions of pieces of construction equipment and pipeline components, and hundreds of contractors were identified to manage and construct portions of the nearly $6 billion project.

And workers, equipment and supplies were transported to jobsites.

After the receipt of federal and state permits and the negotiation of a labor agreement, Alyeska authorized its contractors to proceed with construction of the pipeline haul road on April 29. The initial major construction assignment was to build a road from the Yukon River, in Alaska's Interior, 360 miles north to Prudhoe Bay on the North Slope.

It took five contractors building separate segments of the road exactly five months to complete an initial gravel overlay for the road. By mid-November the road surface was completed to state secondary road specifications.

Working out of 12 construction camps between the Yukon and Prudhoe Bay, workers moved more than 32 million cubic yards of gravel material for the 28-foot-wide road. The project included 20 permanent bridges.

The road now is being used to transport workers, equipment and supplies for the construction of the pipeline. Following completion of the pipeline, the road will be turned over to the state.

Contractors on the road project included Green-Associated Pipeline, Morrison-Knudsen Co. General-Alaska-Stewart and Burgess Contruction Co. Bechtel Incorporated is Alyeska's construction management contractor for pipeline and roads.

Prior to the official start of construction in late April, Alyeska had built construction camps along the pipeline route north of the Yukon River. Seven of the camps had been erected in 1969, shortly after the pipeline project was first proposed by major oil companies. The camps sat idle during the almost five years of national debate on the pipeline project.

During the winter of 1973 and 1974, Alyeska resupplied these camps, built four new camps and leased one camp on the North Slope. Construction equipment, fuel and supplies were transported to the 12 camps over an ice and snow road, and by Hercules aircraft.

Each of the camps is a miniature city, containing living quarters, dining facilities, offices, shops and warehouses, fuel and electrical power generation systems, water and sewage disposal systems and communication systems.

The camps north of the Yukon had an initial bed capacity averaging 300 per camp, the number required to house the workers on the road project. Following completion of the road, work began on the expansion of each of the camps to accommodate the pipeline construction workforce.

South of the Yukon River, seven pipeline construction camps are being built, including a camp located on Ft. Wainwright near Fairbanks. Each of the camps south of the Yukon is open on a limited capacity basis, and is expected to be at full operational capacity in the early spring of 1975.

In addition to pipeline construction camps, camps are being erected at nine pump station sites and at the marine terminal at Valdez. One station camp opened in November, and the others are expected to begin opening on a limited capacity basis starting in January. The camp at the marine terminal, the largest contruction camp on the project, will house about 3,000 workers. Currently, it is housing abut 500 workers.

In all, 29 construction camps are being built for the pipeline project. The camps will provide a total occupancy of about 20,000.

Part of the camp construction included the construction of an airfield or landing strip at most of the camps. The airstrips include seven that are 5,000 feet long or longer, and seven shorter runways that have been or soon will be built. All are gravel strips.

Seven airfields north of the Yukon are being equipped with beacons and navigational aids to permit instrument approaches. Following completion of the pipeline project, three of the camp airfields will become permanent state airfields.

Virtually every mode of transportation is being used to transport workers, equipment and material on the pipeline project. During the winter mobilization in early 1974, 33,000 tons of material were moved to the camps north of the Yukon. Two-thirds of the material was moved by truck over an ice bridge over the Yukon River and over a winter trail of ice and snow. The rest of the material was flown to the camps, primarily by C130 Hercules aircraft.

During 1974, more than one million tons of material were transported for the pipeline project. Fuel and gravel accounted for almost half of the tonnage hauled.

Material was shipped to Alaska from the Lower 48 by truck, barge, ship and air, and it was transported within Alaska by rail, truck and air.

The more than 800 miles of 48-inch diameter pipe, delivered by barge to Alaska in 1971, has been stored at Valdez, Fairbanks and Prudhoe Bay. The 40-foot lengths of pipe at Valdez and Fairbanks soon will be joined into 80-foot lengths and moved by truck and rail to points along the pipeline route.

In addition to moving equipment, fuel and supplies, a major logistical effort involved moving workers to and from work sites. More than 16,000 construction workers were hired on the pipeline job during 1974, although the peak workforce at any one time during the year never exceeded 6,500.

Pipeline construction activity began in the fall of 1974 and consisted primarily of surveying, stockpiling of gravel material, and limited work on right-of-way clearing and construction of access roads.

The first mainline pipe construction is scheduled for mid-January, when a buried river crossing will be constructed north of Valdez. A related pipeline construction project was completed this fall north of Fairbanks, where a 150-foot above-ground section of pipe and a mainline block valve were erected. The project is to demonstrate the valve this winter under various climatic and operational conditions.

There are five pipeline construction contractors, including Arctic Constructors, Associate-Green, H. C. Price, Perini Arctic Associates and Morrison-Knudsen, River Division.

Construction activity at the marine terminal site in Valdez began in mid-1974 and has consisted primarily of building a temporary construction camp and site preparation. More than two million cubic yards of material were moved on the construction site. Erection of the half-million-barrel capacity storage tanks is scheduled to begin this spring.

At nine pump station sites along the pipeline route, work has consisted of building construction camps.

Alyeska buys 18 firetrucks

ANCHORAGE Dec. 20 (AP Following a series of fires which caused an estimated $2.5 million in damages to its transAlaska pipeline construction camps, the Alyeska Pipeline Service Co., is buying a pound of cure.

The consortium announced the purchase of 18 fire trucks to be stationed in 14 camps, two pipeline air strips and at Prudhoe Bay and Valdez.

Robert Larson, safety manager for Alyeska, said Thursday the trucks were similar to fire-fighting equipment used by airports.

The latest of five fires in the past month blackened a kitchen area and crippled a power plant at Dietrich Camp on Dec. 12. An initial damage estimate of $500,000 was boosted to $750,000 Thursday.

About 80 of 120 workers at Dietrich were evacuated to a nearby camp, but Alyeska said the construction force was now at full strength.

Effects All Winter Seen From Storm In Bering Sea Town

NOME, Alaska, Nov. 19 (AP) —This town of 2,500 persons on the Bering Sea, battered by mountainous waves Nov. 10, is trying to regain a normal existence, but some storm effects may linger the entire winter.

Government officials estimate that 75 to 85 families lost everything they owned. The American Red Cross says it has been feeding up to 300 victims and workers a day in the National Guard armory.

Many families are living with relatives and friends. Officials said yesterday that the food and shelter center at the Nome Elementary School was being closed down.

Federal disaster officials said that another problem was that dogs that got loose at the height of the storm had started to rove back, hungry and half-wild.

A state veterinarian was being flown to Nome to aid in their control. Officials said that most of the dogs in the area had received rabies innoculations recently.

As the snow continued to fall, city officials said it might be next spring before the full extent of damage to water and sewer facilities could be determined.

Federal officials had estimated the total loss from the storm at about $12-million.

In a speech during a stopover Sunday in Anchorage, President Ford said, "Quick action must be taken to provide the necessary emergency aid to relieve the tragic plight of the afflicted natives and other citizens."

A spokesman for residents left in distress said the best help from the general public would be cash donations. A fund was being set up at the Miners and Merchants Bank in Nome to help families which have no money to purchase necessities.

One of the big problems, officials said, is that many people lost large amounts of traditional subsistance foods like dried fish, seal and whale meat, which Eskimo and Indian families gather to feed themselves.

"It's too late now to gather more, and they just don't have any money to buy food to replace this sort of thing," one resident said.

Scientists Say Aleutian Artifacts Prove Migration From Siberia

STORRS, Conn., Aug. 24 (AP) —A joint United States-Soviet discovery of 9,000-year-old Aleutian artifacts has led scientists to believe that the items are the first direct evidence that North America's original inhabitants came from Siberia.

The scientists announced Thursday at a news conference at the University of Connecticut that during a two-month expedition this summer on Anangula Island they unearthed several kinds of tool blades that matched implements previously discovered in Siberia.

"This is the first direct link we've had that the Aleuts came to the United States via the Bering land bridge that connected Siberia and Alaska" about 10,000 years ago, said Dr. William Laughlin, a University of Connecticut anthropology professor and the leader of an eight-member contingent from the United States.

A. P. Okladnikov, leader of the five-member Soviet team, noted that Soviet archeologists had found similar tools of the same period in central Asia's Gobi Desert. Mr. Okladnikor is Siberian director of the Soviet Science Academy's Institute of History, Philology and Philosophy.

Dr. Laughlin, an Aleutian specialist since 1936, said that in earlier expeditions scientists had found bones of ancient Aleuts and artifacts dating back to 5,000 B.C.

During the latest trip, scientists discovered 9,000-year-old artifacts indicating that one village on Anangula Island had been inhabited since 8,700 B.C., about the time scientists say a land bridge between Alaska and Siberia split.

The land bridge was at the present site of the Bering Strait, a 55-mile-wide body of water separating the Soviet Union from the United States.

Dr. Laughlin said the Aleutian artifacts were made from whale bone and the Siberian tools were fashioned from stone.

The rich marine life and temperate climate of Anangula, centrally located in the 1,250 mile Aleutian chain off Alaska, were conducive to human life when Asians first emigrated to North America, he said.

The artifacts found this summer, Dr. Laughlin said, were turned up at sites about a-half-mile apart under six feet of earth. One location was about 50 feet above sea level and the other, about 100 feet.

The expedition was funded with a $60,000 grand from the University of Connecticut, the National Science Foundation and the New York-based Wenner-Gren Foundation for Anthropological Research.

Damming Of Bering Strait May Reverse Drought Trend

LOS ANGELES (UPI) — Some scientists believe the Earth is cooling and heading into another ice age. Specialists in a separate part of the scientific community see the Bering Strait as the "thermostat" of the world.

A former Pentagon "think tank" research consultant turned journalist has dovetailed the two ideas.

Lowell Ponte of Los Angeles says damming the Bering strait across its 56-mile wide mouth between Siberia and Alaska could change the cold and warm climates sufficiently to control earth's climate and reverse a trend of droughts which burden people in need of food.

More than two years ago, physicist Clyde Cowen, then at Catholic University in Washington and codiscoverer of the neutrino —the smallest partical of an atom —suggested such a dam to the government.

Cowen said it would bring heavy rains to the Pacific southwest and turn deserts into green valleys. Cowen, who died earlier this year, also said that although he arrived at the idea independently in the early 1950s, it had been discussed for several years in Soviet scientific journals.

"The Bering Strait is the only place I know where one could put his finger in the climate of the world and improve it.

It was believed such a dam would turn the Pacific into a warmer ocean which could change the climates of North America and Siberia, but also would alter the North Atlantic by drawing the warm mid-Atlantic currents into the Arctic Ocean.

Dr. Ronald L. Lavoie, director of environmental modification research for the National Oceanic and Atmospheric Administration, said he does not know of any serious studies of the proposal. Lavoie said government policy is not to conduct any such experiments without knowing what the consequences would be, and he said scientists are not able to predict what would happen to weather.

In a recently published booklet, "The New Cold War," Ponte quoted several scientists who agree the Earth is cooling.

He said there are about 60 separate theories as to why, but they all agree the results of this global cooling could have tragic effects on the world's food supply.

Another journalist, Tom Alexander, in a February, 1974, Fortune Magazine article comprehensively delineated the evidence of many scientists concerned with the possibility of another ice age.

It was noted by climatologists that the Earth began a cooling period about the 15th Century. It was not until about 1890 that the Earth warmed up significantly. And during a period of little more than 50 years — until about 1945 — crops became more abundant and the world's population more than doubled.

After about 1949, the cooling was noticeable again. Alexander noted that the total drop since the 1940s has been about 2.7 degrees. While the change seems small, the effects have been dramatic to farmers and fishermen.

A GAS FIND IN ARCTIC IS REPORTED BY TASS

MOSCOW, Aug. 9 (AP)—Soviet geologists have discovered a gas deposit containing more than a trillion cubic meters on the shore of the Arctic Ocean in the polar circle, Tass, the Soviet press agency, reported

The discover was made on the Yamal Peninsula, on which four gas deposits have already been found, Tass said. Some of the deposits extend beneath the Kara Sea and explorations of the Yamal shelf are planned.

Tass said geologists also planned to sink exploratory wells on Yamal, hoping to find oil deposits in the lower parts of the peninsula.

Eskimos Match Skills at Arctic Games

By ROBERT TRUMBULL
The New York Times

TUKTOYAKTUK, Northwest Territories—An Eskimo from the tiny hunting and fishing village of Sachs Harbour, on frigid Banks Island in the Canadian Arctic, loosened his fur-lined parka and said, "Down here I feel like it's too far south for comfort."

He was one of several visitors whose presence has briefly transformed this bleak knoll on the shores of the Beaufort Sea, 190-mile north of the Arctic Circle, into the social, cultural and sporting capital of the American and Canadian Far North.

Despite a sharp wind chilled by the ice floes farther north, temperatures of 40 to 50 degrees above zero seemed balmy by Arctic standards. The bright midsummer sun never sets.

The visitors had come from more than 20 isolated settlements along the rim of the polar region from Alaska to northeastern Canada for the 1974 Northern Games, the fifth annual competition in traditional Eskimo and Indian skills. Instead of Western sports such as running and jumping, there were contests in harpoon throwing, seal skinning and games tailored to the confined space of an igloo, or snow house, such as seeing who can hop the farthest on toes and knuckles, or lift the heaviest weight by a loop of cord around one ear.

The contest to choose the "Good Woman of the Year" was the glamor event. "Being a good woman in the North, contributing to family and community, is as hard as being a good man, if not harder," an organizer explained.

The New York Times/Aug. 11, 1974

Tuktoyaktuk has become cultural and sporting center of the Far North.

This year's winner is Mrs. Mary Anablak, a 40-year-old Eskimo from Coppermine, a headquarters for copper and uranium prospectors 450 miles southwest of here on Coronation Gulf. She was judged the best all-around performer in three days of competition in skinning seals and muskrats, boiling tea (the contestants start by foraging for the firewood), plucking geese, baking bannock (unleavened bread, an Arctic staple) and sewing.

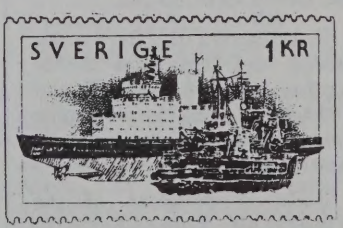
"Skinning a seal is not as easy as it looks," said an observer. Eskimo women use a crescent-shaped blade called an ulu; if you nick the skin you lose points. The record for skinning, cleaning and stretching a skin is 22 minutes, set by Mrs. Bertha Ruben of Paulatuk, a tiny Eskimo settlement on Darnley Bay, in 1971.

The temporary tent village where the visitors stayed—there is no public accomodation—must have been the liveliest place in the whole Canadian Arctic for the three days of the games. After the competitions, which began in the afternoon and ended under the midnight sun, there was dancing for the rest of the sunlit night to the rhythm of caribou-hide drums beaten with sticks made of whale bone.

The Northern Games, which get financial support from the government and business concerns, have political overtones for the Eskimos and Indians. A disadvantaged minority since this vast, naturally rich country was taken over by whites after the Gold Rush at the turn of the century, the native peoples are organizing to reclaim lost rights.

"Preserving the valued customs of the past by joining together in a time of good fun and friendly social exchange is one of the important ways of preparing for a future when native northerners will play leading roles in the development of their own land," says the official program for the 1974 games.

Greenland Christmas Stamp



Ice-breaker

Ice Island T-3 due for evacuation soon

Sept. 14

Fletcher's Ice Island, T-3, is scheduled for evacuation and will be placed on stand-by status at the end of this month. The station is located north of Ellsmere Island in the Arctic Ocean.

According to Dr. Warren W. Denner, director of the Naval Arctic Research Laboratory at Barrow, the research station will be—in his words—evacuated and placed on stand-by status until reoccupation is considered feasible.

The abandonment of the island comes as a result of funding problems. Denner said, "the laboratory cannot support the station with existing resources and the scientists would like to do their research in other parts of the Arctic Ocean."

The Naval Arctic Research Laboratory is operated for the U.S. Navy by the University of Alaska.

The ice island T-3 has been at its present location for some time and Denner said it will be reoccupied if it moves closer to Barrow and into areas of greater scientific interest.

Bill Lasher, field coordinator at the laboratory is in charge of the evacuation which will be carried out between Sept. 23 and Sept. 30.

It will be carried out using ski-equipped C130 aircraft operated by a navy squadron out of California which flies support missions to McMurdo camp in Antarctica.

Much of the equipment taken from T-3 will be used in the establishment of four AIDJEX ice stations planned for February, 1975.

Fletcher's Ice Island was established in 1952 by the U.S. Air Force. The Naval Arctic Research Laboratory assumed responsibility for its operation in 1962.

Over the years the island has supported scientific operations in oceanography, geology, geophysics, ice and underwater acoustics.

Polar Society head tours

THE PRESIDENT—Dr. F. Alton Wade, a geographer who made two trips to Antartica with Admiral Richard Byrd, visited the University of Alaska campus at Fairbanks during a recent vacation trip to Alaska. Wade, the president of the American Polar Society, talks with Dr. William Hunt, head of the UA history department, whose class he lectured while here.

A geologist who traveled with antarctic explorer Admiral Richard Byrd on two expeditions into that polar region, Dr. F. Alton Wade, visited Fairbanks this month (Sept. 10-20).

Wade traveled with Byrd on his second and third trips to the southern ice cap, 1933-35 and 1939-41, charting the geographic characteristics of the antarctic land mass.

Wade is president of the American Polar Society, headquartered in New York. Efforts are now being made to organize a chapter of the society of Fairbanks where some 40 members currently reside.

He was in Fairbanks visiting friends and gave guest lectures to two classes on the University of Alaska campus.

He is currently head of the Antarctic Research Center Museum at Texas Technological University.

When asked to recount amusing, exciting, or dramatic incidents during the polar expeditions, Wade simply chuckled and said such instances "were a daily occurrence."

He said the most exciting thing about the trips was the fact that each day found the expedition in uncharted territory.

"Every place we went," he said. "we were the first people ever there. It was a strange feeling."

He said his greatest thrill from the expeditions was in 1934 when a dog team party under the command of Paul Siple was the first group to visit what came to be known as "Marie Byrd Land."

Much of Wade's geographical work was done at Marie Byrd Land, an area about 200 miles east of Little America in Antarctica.

He has made five visits to the Polar Cap on National Science Foundation grants since 1962. On those visits he has worked in the Transantarctic mountains some 200-300 miles from the South Pole.

HONOLULU, Aug. 28

Prospectors for new mineral wealth in the Pacific were told yesterday in separate talks that they should unlock the storehouse of reserves in Antarctica and worry less about oil pollution of the oceans.

Geologist F. A. Wade, who has explored Antarctica for more than three decades, said the time is ripe to organize a prospecting program for the icy continent.

"When a mineral is needed, we can then proceed in orderly fashion to extract it from the bottom of the world, he said. Antarctica has defied exploitation in the past, he said, because of its isolation, environment, and the high cost of mineral exploration.

MINERAL depletion elsewhere, however, will continue to focus the world's eyes more steadfastly on Antarctica, he said.

Wade spoke before the Circum-Pacific Energy and Mineral Resources Conference, which enters its third day of lectures and presentations today in Waikiki. Almost 1,000 earth scientists, engineers and developers from more than 60 countries are attending.

race for new energy and mineral supplies.

Wade said the discovery of more than 220 minerals in Antarctica is a mere byproduct of other kinds of research down below. "There has never been intensive, or even casual mineral exploration," he said.

DEPOSITS available in commercial abundance, according to Wade, seem to include gold, silver, iron, copper, chromium, cobalt, nickel, tin, zinc and coal.

Even fresh water is a resource, he said, noting that Antarctica keeps about 90 per cent of all the fresh water of the entire globe tied up in ice.

Musk-oxen starving

Aug. 21

YELLOWKNIFE, N.W.T. (AP) — There is evidence of widespread starvation among arctic musk-oxen, says Paul Kwaterowsky, superintendent of game for the Northwest Territories.

Kwaterowsky, who predicted starvation last October after the number of shaggy-coated beasts increased sharply, said Tuesday that about 100 musk-ox corpses had been found from Ellsmere Island to the Bathurst area.

However, he said it would be premature to say how many had starved to death. "We'll have a better idea in November when we meet with the Canadian Wildlife Service and discuss a plan of action," he said.

The species does not appear to be in danger, Kwaterowsky added.

"There will always be musk-oxen for the next two or three hundred years, because if they die off it gives the vegetation a chance to come back," he said. "It's an endless cycle.

"What is alarming, however, is we have large areas where there are no calf crops at all."

Marie Ames Byrd and her husband, Adm. Richard E. Byrd, in 1956, the year before the admiral died.

Mrs. Richard E. Byrd, 85, Dies; Widow of Explorer and Aviator

The New York Times

BOSTON, Sept. 4 — Marie Ames Byrd, widow of Rear Adm. Richard E. Byrd, the polar explorer and aviator, died yesterday at Massachusetts General Hospital. She was 85 years old.

Mrs. Byrd, an admitted Boston Brahmin who traced her lineage to the Mayflower pioneers of 1620, was active most of her life in Boston civic and patriotic organizations. She was also a concerned member of organizations with which her husband had a special association, including the National Geographic Society and the American Museum of Natural History in New York. In addition, she was a trustee of the Byrd Foundation, which pursued the Admiral's internationalist and humanitarian goals.

Marie Byrd Land, in Anarctica, was named for Mrs. Byrd by her husband, who discovered the area on an expedition in 1933-34 to what was then called "Little America." In 1929, the admiral, with Bernt Balchen, Harold June and Capt. A. C. McKinley, had flown over the South Pole. He had, in 1926, flown over the North Pole. In all, he directed seven polar expeditions. Following the late Charles A. Lindbergh, Admiral Byrd, with a crew of two and a passenger, flew from New York to France in 1927.

Marie Byrd was born in Boston Jan. 19, 1889, and attended the Windsor School and the Convent of the Sacred Heart in Paris. As a young woman, she played the violin and was active in the Junior League.

She and Admiral Byrd were married in 1915, three years after he graduated from the United States Naval Academy. He died in 1957 at the age of 68.

After his death, Mrs. Byrd helped to inventory his extensive collection of memorabilia, which included material of historical and scientific importance related to aviation and exploration. The family home, at 9 Brimmer Street, in the Beacon Hill section, was the site of the Admiral's archives and library. Mrs. Byrd, before her death, designated the building as a historic home, which she wanted opened to the public.

In carrying on her husband's ideals, Mrs. Byrd was a strong advocate of the international treaty that bans nuclear testing in the Antarctic. The admiral was among those who had suggested such a pact.

Mrs. Byrd leaves a son, Comrd. Richard E. Byrd Jr. of this city; 2 daughters, Mrs. Bolling Byrd Clarke of Chestnut Hill, Philadelphia, and Mrs. Katharine Ames Byrd Breyer of Los Angeles; a sister, Mrs. George Lafayette Washington of Bryn Mawr, Pa., and 13 grandchildren

BERT R. J. HASSELL, GREAT-CIRCLE PILOT

ROCKFORD, Ill., Sept. 13 (UPI)—Bert R. J. Hassell, an aviation pioneer, who held Pilot's License No. 20, died yesterday at Rockford Memorial Hospital. He was 80 years old.

Mr. Hassell's major achievement was the establishment of the Great Circle route over the Atlantic, the route most commercial airliners now use.

He and Parker D. Cramer, his co-pilot, were on newspaper front pages in August, 1928, when they took off from Rockford for Sweden. They flew north to Greenland instead of east to Europe.

They made the trip in stages. The first leg was to Cochrane, Ontario, where they were delayed two days by rain. The next stage, over a northern wilderness inhabited only by a few trappers and fishermen, ended the attempt. They missed a landing strip on Greenland and crashed into the Arctic snow. Two weeks later, the two pilots, on foot, made their way to a camp near Mount Evans, Greenland.

Mr. Hassell, who began his flying career in 1917 as a student of Glenn Curtiss, was named to the Aviation Hall of Fame in 1971. He retired from the Air Force as a colonel

LADY WILKINS

Lady Wilkins, widow of Sir Hubert Wilkins, the Australian polar explorer by plane and submarine, died Dec. 8 in the Orange View Convalescent Home in Anaheim, Calif. She was 73 years old.

Lady Wilkins, the former Suzanne Bennett, was born in Victoria, Australia, studied at the University of Melbourne and became an actress here. As an Australian she was invited to take part in New York's civic reception for the explorer after his flight across the polar regions from Alaska to Spitsbergen. They were married in 1929. Sir Hubert died in 1958.

31 persons die in Canada crash

EDMONTON, Oct. 30 (AP)—Royal Canadian Mounted Police said today 31 persons were killed Tuesday night when a plane crashed through the ice off Melville Island in the Canadian arctic.

An RCMP spokesman said three persons survived the crash and were in serious condition.

The four-engine Lockheed Electra, owned by PanArctic Oils Ltd. of Calgary, was on a flight from Edmonton to Rae Point. A company spokesman said the plane apparently crashed about two miles short of the landing strip at Rae Point.

He said the aircraft was on a routine flight and carried oil drilling personnel employed by four to eight different contracting firms.

American Killed In Antarctica

CHRISTCHURCH, New Zealand, May 17 (UPI)—An American civilian was killed yesterday when his truck left the road and crashed 600 feet down a hill between the U.S. Antarctic base at McMurdo and the New Zealand Scott Base, a project official said here today.

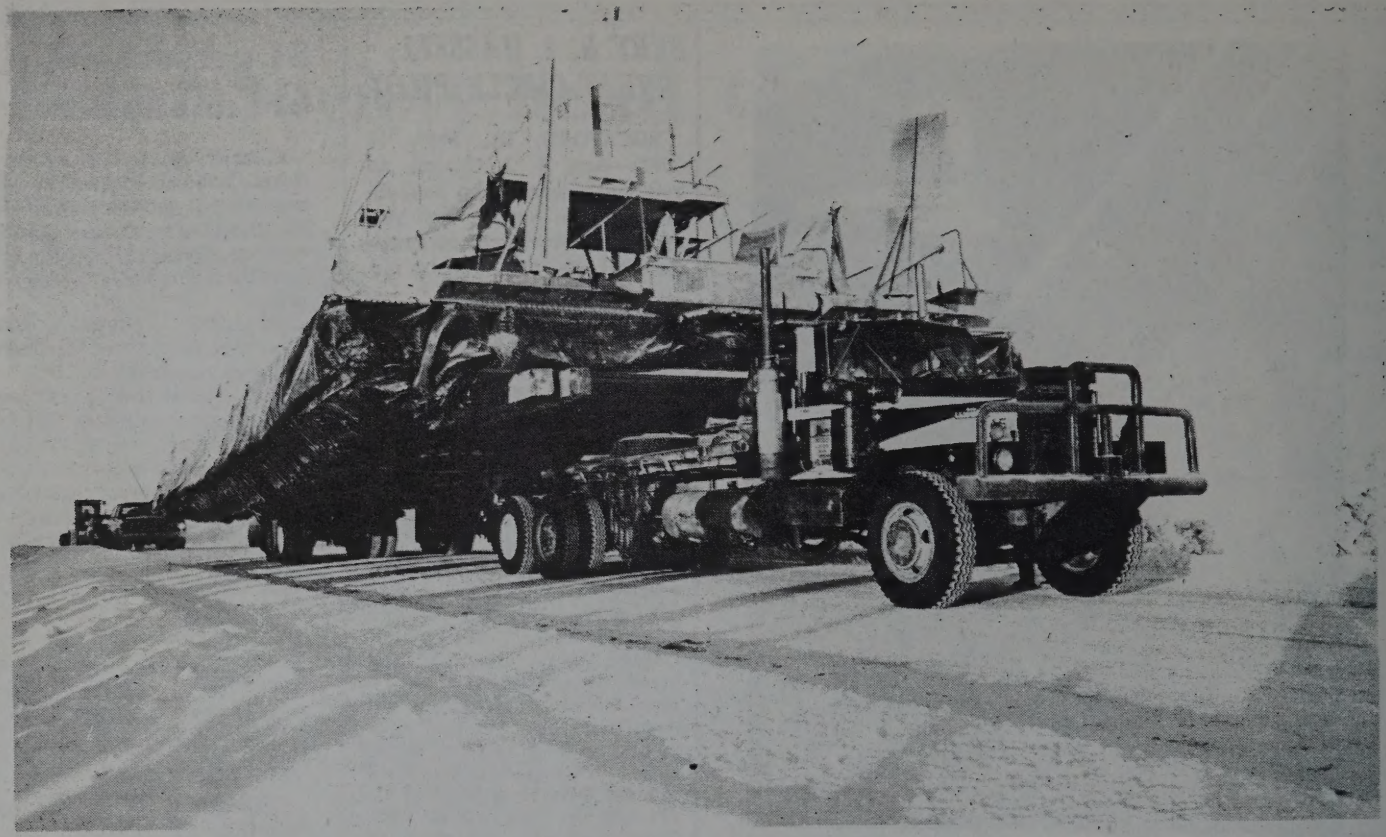
Gregory Nickell, 26, a laboratory manager at McMurdo, was wintering in Antarctica. His parents live in Boulder City, Nev.

Clyde C. Williams, 93, 'Alaska Sourdough,' Dies

CHICAGO, Oct. 10 (AP)—Clyde C. (Slim) Williams, who traveled in the nineteen-thirties by dogsled from Copper Center, Alaska, to Washington, died yesterday. He was 93 years old. Mr. Williams was the subject of a biography, "Alaska Sourdough," as well as explorer, hunter, guide and lecturer.

Clyde Willams, the principal figure in Jack London's story, "Burning Daylight," made a 13-month trek by dog sled from Fairbanks to Washington. He began the trip over Alaska's frozen wastes and had to mount the sled on wheels. He made the journey to tell President Franklin D. Roosevelt that Alaska should have a highway from Fairbanks into the United States.

In 1939 he and John Logan arrived from Fairbanks at Prince George, British Columbia, on two motorcycles



TAKING A RIDE—Instead of a cushion of air, this air cushion vehicle (ACV) travels down the pipeline haul road atop two side-by-side trailers, pulled by a tractor truck. The ACV was towed from Prudhoe Bay to the Yukon River where it is standing by to transport across the river fuel, supplies and equipment for the trans-Alaska pipeline project. (Alyeska Photo)

DRILLING PAD—These are production wells on the North Slope waiting to be hooked to gathering-flow centers.